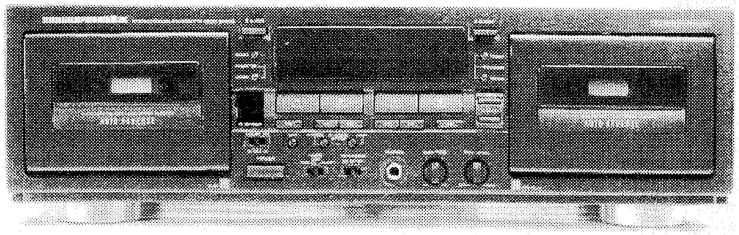
# Service Manual

**SD555 F, U**
**74SD555/01B/02B/05B**

## Stereo Cassette Tape Deck



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修理の際は、必ず取扱説明書を準備し操作方法を確認の上作業を行ってください。
Please use this service manual with referring to the user guide (D.F.U) without fail.

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# model SD555


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CANADA
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FAX : 416-831-6936

**EUROPE**

MARANTZ EUROPE B.V.
P.O.BOX 80002
BUILDING SFF2
5600 JB EINDHOVEN
THE NETHERLANDS
PHONE : +31-40-2732241
FAX : +31-40-2735578

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BUILDING SFF2
5600 JB EINDHOVEN
THE NETHERLANDS
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FAX : +31-40-2735578

**AUSTRALIA**

MARANTZ AUSTRALIA
3 Figtree Drive
Australia Centre
Homebush, NSW2140 AUSTRALIA
PHONE : +61 2 742.8311
FAX : +61 2 7643074

**HONG-KONG**

FORWARD INTERNATIONAL CORP. LTD.
15 TH FLOOR, REGENT CENTRE,
88 QUEEN'S ROAD, CENTRAL, H. K.
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PAI-YUING CO., LTD.
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FAX : +886 (2) 5630415

**MALAYSIA**

WO KEE HONG ELECTRONICS SDN. BHD.
NO. 102 JALAN SS 21/35, DAMANSARA
UTAMA, 47400 PETALING JAYA
SELANGOR DARUL EHSAN,
MALAYSIA
PHONE : +60 3-7184666
FAX : +60 3-7173828

**SINGAPORE**

FORWARD MARKETING (SINGAPORE) PTE. LTD.
29, LENG KEE ROAD
SINGAPORE 159099,
PHONE : +65 475-4555
FAX : +65 475-8623

**JAPAN**—*Technical*

MARANTZ JAPN INC.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan
PHONE : +81 427 48 2181
FAX : +81 427 48 0889

日本マランツ株式会社

本　社〒228 神奈川県相模原市相模大野7丁目35番1号

営業本部〒150 東京都渋谷区恵比寿南1丁目11番9号

### SHOCK, FIRE HAZARD SERVICE TEST:

**CAUTION:** After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins ( with unit NOT connected to AC mains and its Power switch ON ), and the face or Front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before it is return to the user/customer.

Ref. UL Standard NO.1492.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

960514KI

# 1. DISASSEMBLY INSTRUCTIONS

## 1. How to Remove the Front PANEL A'ssy

(1) Remove the six screws (SPECIAL SCREW) (101) in the side of the top cover (35). Move the top cover to the rear and rise it to remove it.

(2) Disconnect all lead connectors.

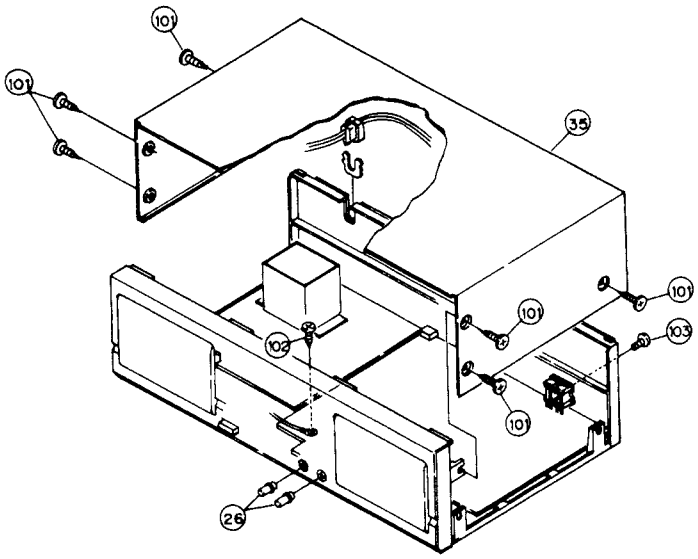
| | | |
|---|---|---|
| C. Mecha (A) | P.B. Head wire → CB131 | Audio P.W. board |
| C. Mecha (B) | ERASE Head wire → CB143 | Power P.W. board |
| | PB/REC Head wire → CB141 | Audio P.W. board |
| Display P.W. board | CW121-1A → CN121-2A<br>CW121-1B → CN121-2B | Audio P.W. board |

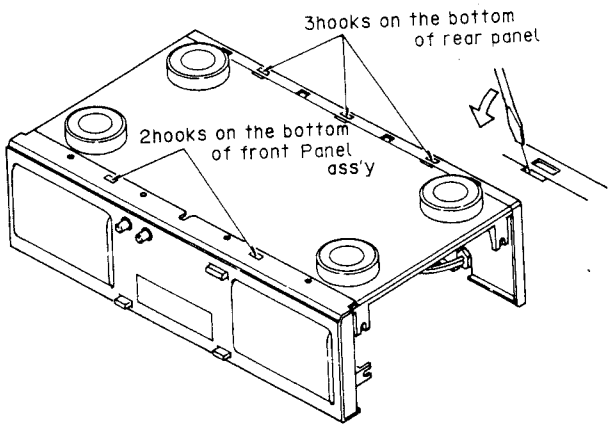
(3) Remove the Volume knob (26).

(4) Remove the screw (3X8CBTS(P)-B) (103).

(5) Remove the screw (3×8CBTS(S)-B) (102).

(6) Remove the two Hooks on the bottom, Front Panel Ass'y can be removed towards the front.




## 2. How to Remove the Cassette Mechanisms

Remove the four mechanism retaining screws (3X8CBTS(P)-B) (103), (3X8CBTS(S)-B) (102) and take out C. Mechanism (A) (22) and C. Mechanism (B) (23).

## 3. How to Remove the Display P.W. board

(1) Disconnect leads connectors.

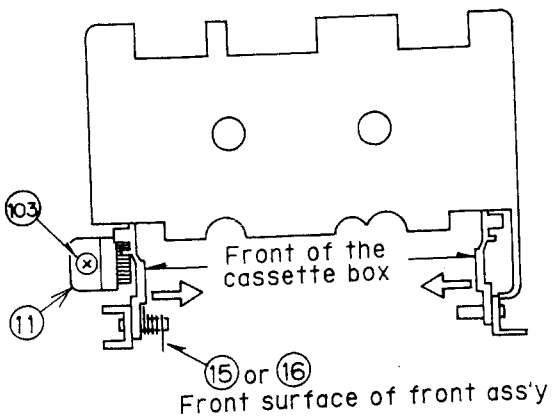
| | | |
|---|---|---|
| C. Mecha (A) | → CN242 | Display P.W. board |
| C. Mecha (B) | → CN241 | |

(2) Remove the six Display P.W. board retaining screws (3X8CBTS(P)-B) (103) and take out the Display P.W. board.

## 4. How to Remove the Cassette Door

(1) Remove the Mini Damper (11) retaining screw (3X8CBTS(P)-B) (103) and take out the Mini Damper (11).

(2) Hold the legs of the CASSETTE BOX folded inwards and pull up to remove the CASSETTE BOX (13) and BOX SPRING (15) (16).



## 5. How to Remove the Back panel

(1) Remove the top cover (35) and front Panel. Ass'y. (Refer to section 1.)

(2) Remove the screw (3X8CBTS(P)-B) (103) that is holding the 4P pin jack.

(3) Remove the busing (6) (7) that is fixing power supply cord from back panel (48).

(4) Remove the three hooks on the bottom of back panel (48) and pull the unit back to detach it.

## 6. How to Remove the Audio P.W. Board

(1) Remove the top cover (35) and the front esc. Ass'y. (Refer to section 1.)

(2) Remove the screw (3X8CBTS(P)-B) (103) that is holding the 4P pin jack.

(3) Remove the connectors from the audio P.W. board and power P.W. board.
power P.W. board CW191 → CN191 audio P.W. board

(4) Remove the five screws (3X8CBTS(P)-B) (103), (3X8CBTS(S)-B) (102) the audio P.W. board can be removed by rising it.

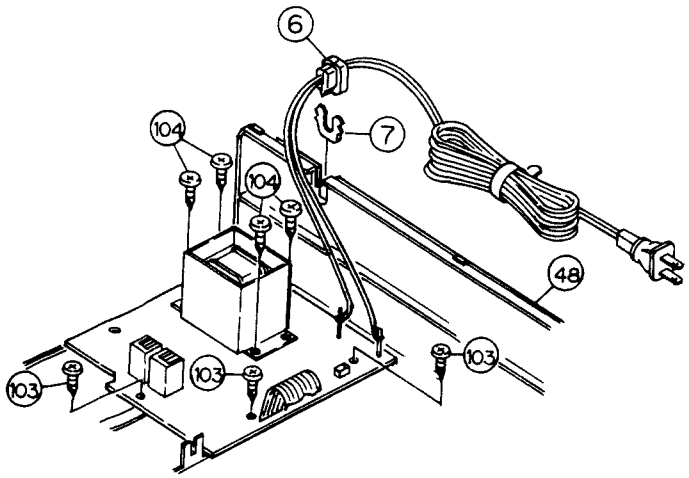
## 7. How to Remove the Power Supply P.W. board

(1) Remove the top cover (35). (Refer to section 1.)

(2) Remove the busing (6) (7) that is fixing power supply cord from rear panel (48).

(3) Remove the connectors from the audio P.W. board and power P.W. board.
power P.W. board CW191 → CN191 Audio P.W. board

(4) Remove the seven screws (4X10CBST(P)-Z) (104), (3X8CBST(P)-B) (103) that are holding the power transformer and P.W. board. The power supply P.W. board can be removed by rising it.



## 2. ADJUSTING AND CHECKING THE MECHANISM SECTION

### 1. Replacing the Pinch Roller

Before replacing the pinch roller, clean the tape contact surface of the pinch roller and the capstan shaft.

Most causes of poor tape transport can be traced to dirty pinch roller and capstan shaft.

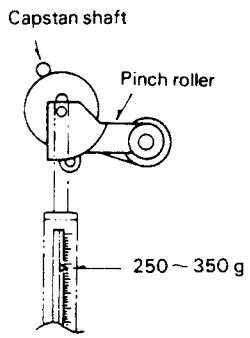
Remove the clips that press the pinch roller and pull the pinch roller forward to remove it.

After replacing, run a padless C-90 tape to check for tape curls at the tape guide section of the head.

### 2. Checking the Pressure Force of the Pinch Roller

In the playback mode, hook a spring weight onto the bracket at the center of the pinch roller. After separating the pinch roller from the capstan shaft, allow the pinch roller to contact the capstan shaft again. Check to make sure the spring weight reads between 250—350 g when the pinch roller starts to rotate.

Replace the pinch roller when it does not conform to the standard specification values.




### 3. Replacing the Record/Playback Head

(1) How to remove the R/P HEAD.

1) Remove securing screw and azimuth adjusting screw from the record/playback head.
2) Remove the soldered head wire and disassemble the mechanical unit to remove the record/playback head.

(2) How to assemble the R/P HEAD.

Reverse the above (1) procedures for removing the R/P HEAD.

* Solder the HEAD WIRE according to the diagram.

mechanism (recording/playback head)

### 4. Checking the Take-up Torque

Load the cassette type torque meter (SONY TW2111).

Check to make sure that the average torque meter reading is within 30-70 g-cm during playback.

### 5. Checking the FF and REW Torques

Load the cassette type torque meter (SONY TW2231). Check to make sure the torque meter indicates within 80~170 g-cm at the end of FF and REW.

### 6. Checking the Back Tension Torque During Record/Playback

Load the cassette type torque meter (SONY TW2111); check to make sure the torque meter reads between 2 —6 g-cm during playback and that there is no unevenness.

If it is not within this range, replace the reel ass'y or Washer.

### 7. Checking the FF and REW Times

Load a C-60 cassette tape check to make sure the tape is fast forwarded or rewound within 120 seconds. If it is not within this range, check sections 5 and 6.

### 8. Checking the Existence of a Cassette Housing and the Operation of the Erase Prevention, Metal and Chrome Switch

Confirm that the sensor arm properly detecting the tape type detection holes on the cassette housing.

## 3. ADJUSTING THE ELECTRICAL SECTIONS

### • Measuring instruments necessary for adjustments

(1) Audio signal generator
(2) Variable resistance attenuator
(3) Electronic voltmeter
(4) Oscilloscope
(5) Frequency counter
(6) Adjustment screwdriver
(7) Trap coil adjustment square stick
(8) Test tapes (A-BEX TCC-112)
(A-BEX TCC-130, TCC-153, TCC-262B/162B)
(TDK AC-514)
(9) Transport Check cassette tape (A-BEX TCC-902)
(10) Lead line with alligator clip

### • Caution on adjusting

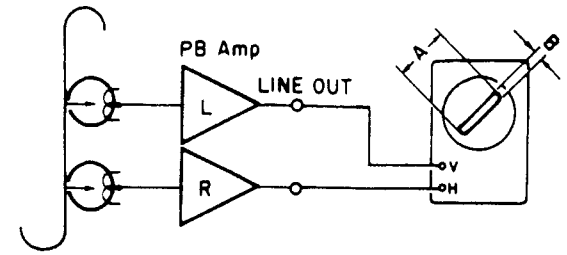
(1) Before adjusting, clean the head surface, capstan and the pinch roller with a gauze or a cotton swab moistened with alcohol.
(2) Demagnetize the R/P HEAD and the E. HEAD with a head eraser.
(3) Completely demagnetize the adjustment screwdriver.
(4) Unless instructed otherwise, set the various controls as follows:
○ INPUT volume ..... maximum
○ DOLBY NR switch ..... OFF
○ BIAS volume ..... Center click position

### 1. Tape Transport Check

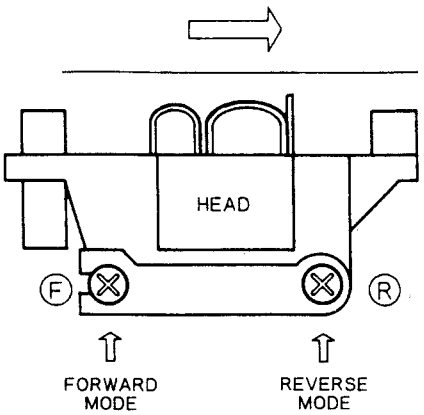
Load the transport check cassette. In the operational mode, illuminate the fixing guides of the R/P HEAD with a lamp and check to make sure the tape edge does not come in contact with the tape guide section.
The tape transport is the most important element in determining the performance of a cassette deck.
Avoid moving the various adjustment screws, nuts, etc., as much as possible. Refer to the pages on "Adjusting and Checking the Mechanism Section" when replacing or adjusting the R/P HEAD.

### 2. Adjusting the Azimuth

(1) After completing the tape transport check, load the test tape (A-BEX TCC-153).
(2) Playback the test tape; adjust the azimuth screw so that section A of the resurge wave form is maximum and section B is minimum.

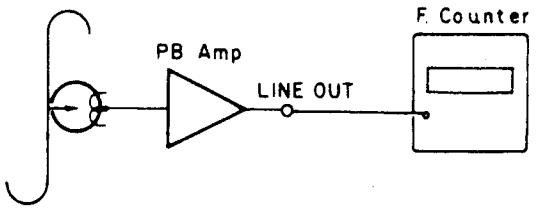


A-BEX TCC-153




### 3. Checking and Adjusting the Tape Speed

(1) Connect the frequency counter to the LINE OUT terminal and load test tape (A-BEX TCC-112)
(2) Load cassette tapes on both cassette decks A and B. Next, on the deck (A or B) whose speed is to be adjusted, while holding down the PLAY, FF and REW buttons together, press the POWER switch. After the power has been on for about two seconds, the Remote Control Indicator "■" in Display will light up and the cassette deck will begin to play in speed adjustment mode.
(Speed adjustments can not be made, unless this mode is first selected.)
(3) At first high speed adjustments, press the DUBBING SPEED "HIGH" button and use Meter Unit RT554 for Cassette Deck A and RT552 for Cassette Deck B.
Next normal speed adjustements, press the DUBBING SPEED "NORMAL" button and use Meter Unit RT553 for Cassette Deck A and RT551 for Cassette Deck B.
(Note that speed adjustment mode is cancelled when the tape is ejected.)



A-BEX TCC-112

| Mode | A/B | Adjusting volume number | F. counter (Hz) |
|---|---|---|---|
| Normal speed | A | RT-553 | 3020±10 |
| | B | RT-551 | 3010±10 |
| High speed | A | RT-554 | 6030±20 |
| | B | RT-552 | 6020±20 |

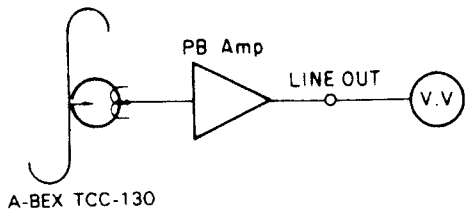
## 4. Adjusting the Playback Section

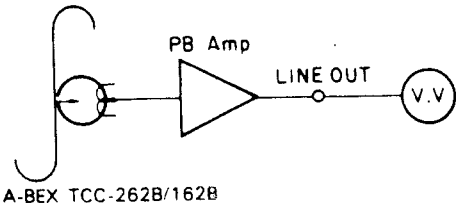
(1) Adjusting the playback level

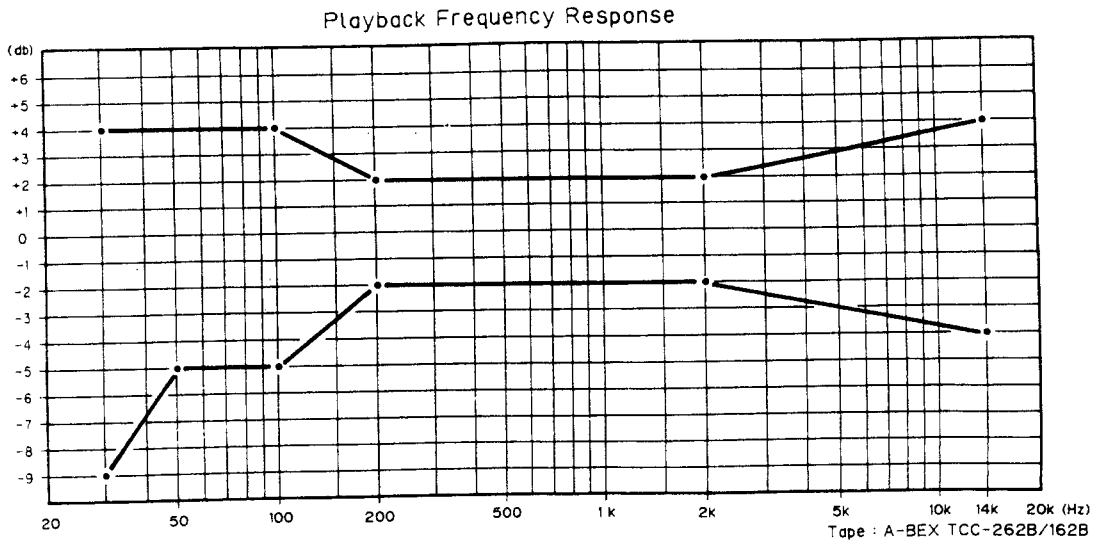
- A-deck Playback the Dolby standard level test tape (A-BEX TTC-130) and adjust RT-101 (L ch), RT-201 (R ch) so that the LINE OUT voltage becomes 0 dB (775 mV).
- B-deck Playback the Dolby standard level test tape (A-BEX TTC-130) and adjust RT-102 (L ch), RT-202 (R ch) so that the LINE OUT voltage becomes 0 dB (775 mV).

(2) Adjusting the playback frequency response

Playback the test tape (A-BEX TCC-262B/162B) and check to make sure that the frequency response meets the specifications in the diagram.



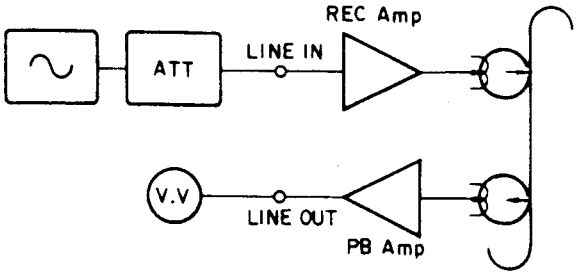



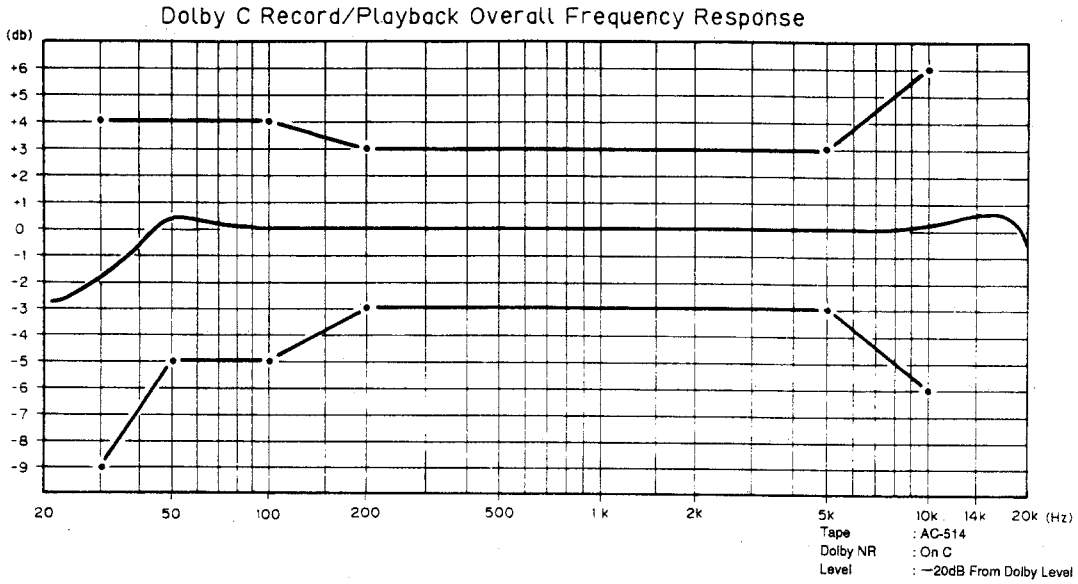
## 5. Adjusting the Recording Section

(1) Adjusting the record/playback overall frequency response. (HIgh)

1) Load the test tape AC-514, record a signal with an input level of −40 dB. 1 kHz at the LINE IN terminal; playback this recording.

2) Change the frequency of the input signal to 10 kHz, record and playback; adjust RT-105 (L ch), RT-205 (R ch) so that the characteristic standards meet the following diagram when compared to the 1 kHz signal output level.
(The other TAPE POSITIONS will automatically be adjusted by finishing of the foregoing adjustments.)




(2) Adjusting the record/playback levels (HIgh)

1) Load a AC-514 tape and after having recorded a signal of 1 kHz (−20 dB), play it back.

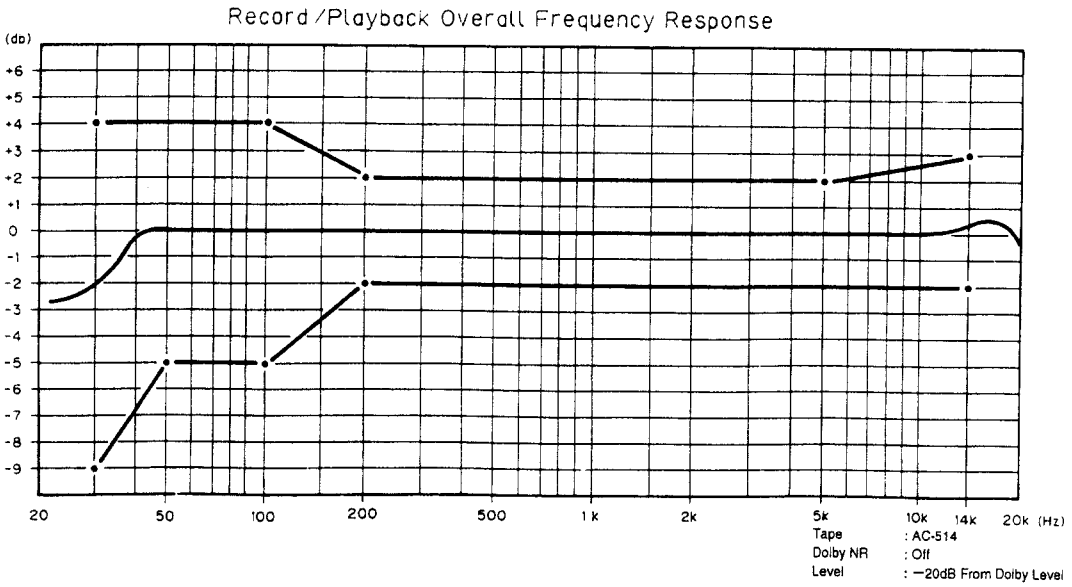
2) Adjust RT-103 (L ch) and RT-203 (R ch) so that the output from the line out terminal has the same value as the output when monitoring the recording.

(3) Checking the Dolby C record/playback overall frequency response

1) Set the DOLBY NR switch to the "C" position.

2) Using the test tapes AC-514, perform record/playback in the same manner as 5-(1).

3) Check to make sure that the record/playback overall frequency response meets the specifications in the diagram.



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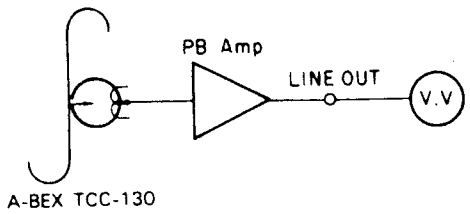


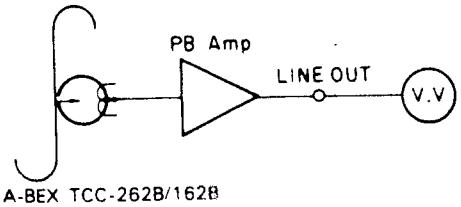


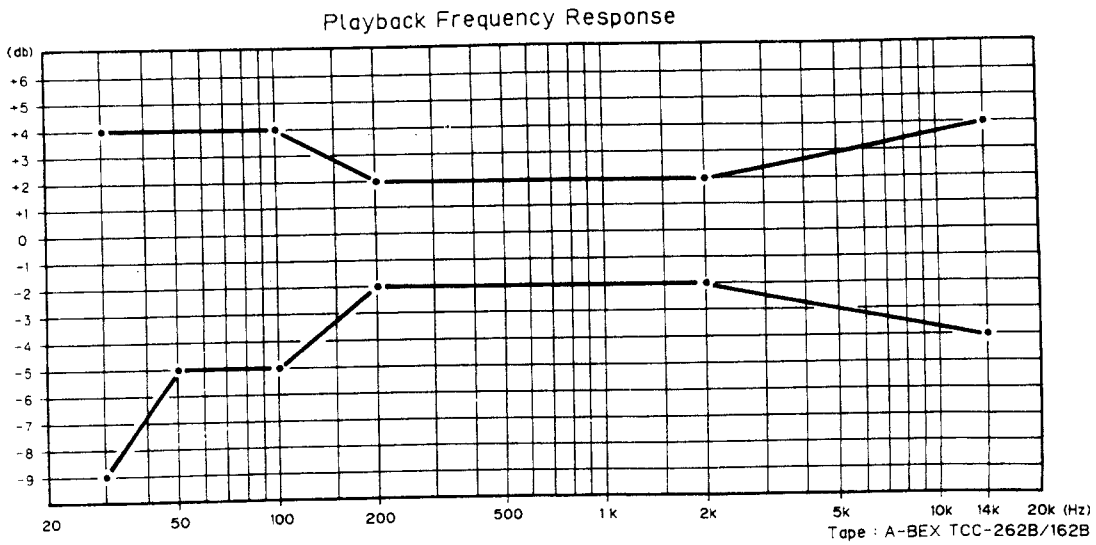

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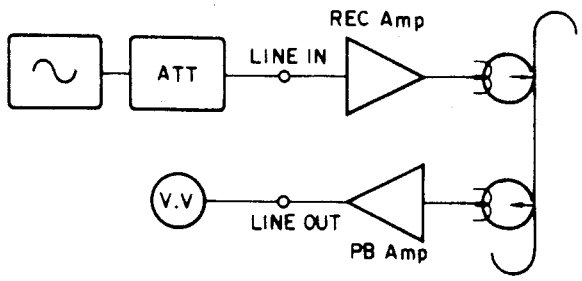


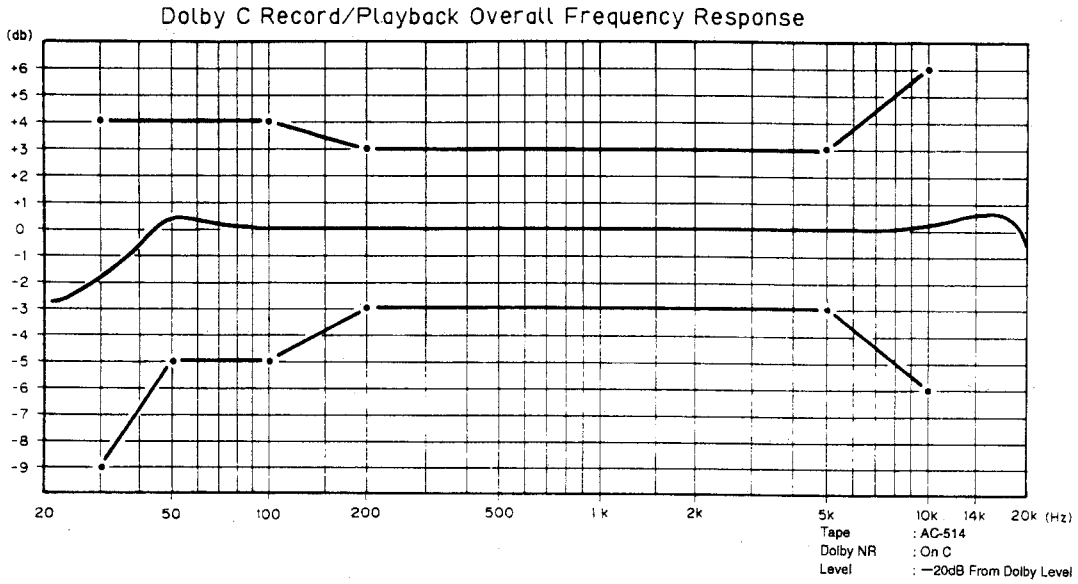


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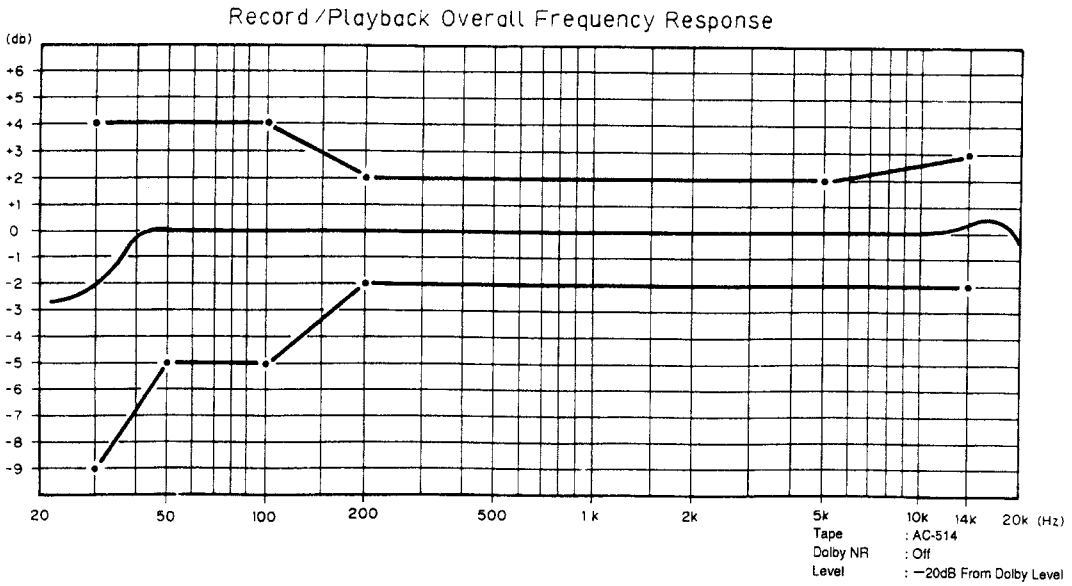
2) Using the test tapes AC-514, perform record/playback in the same manner as 5-(1).

3) Check to make sure that the record/playback overall frequency response meets the specifications in the diagram.



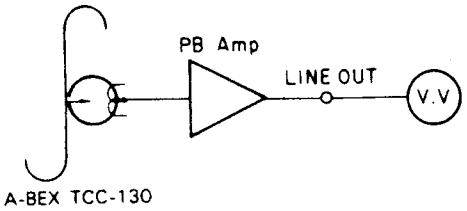
## 4. Adjusting the Playback Section

(1) Adjusting the playback level

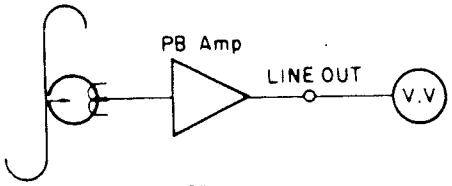
- A-deck Playback the Dolby standard level test tape (A-BEX TTC-130) and adjust RT-101 (L ch), RT-201 (R ch) so that the LINE OUT voltage becomes 0 dB (775 mV).
- B-deck Playback the Dolby standard level test tape (A-BEX TTC-130) and adjust RT-102 (L ch), RT-202 (R ch) so that the LINE OUT voltage becomes 0 dB (775 mV).

(2) Adjusting the playback frequency response

Playback the test tape (A-BEX TCC-262B/162B) and check to make sure that the frequency response meets the specifications in the diagram.

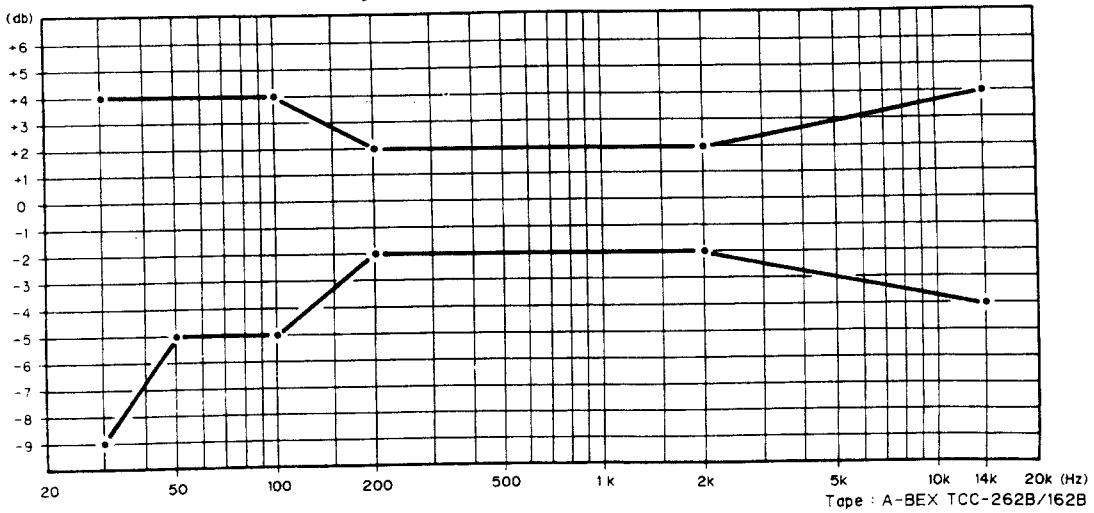



A-BEX TCC-130




A-BEX TCC-262B/162B

Playback Frequency Response



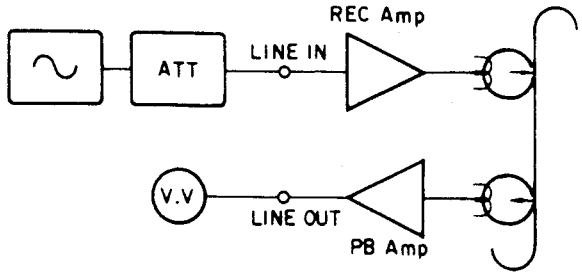

Tape : A-BEX TCC-262B/162B

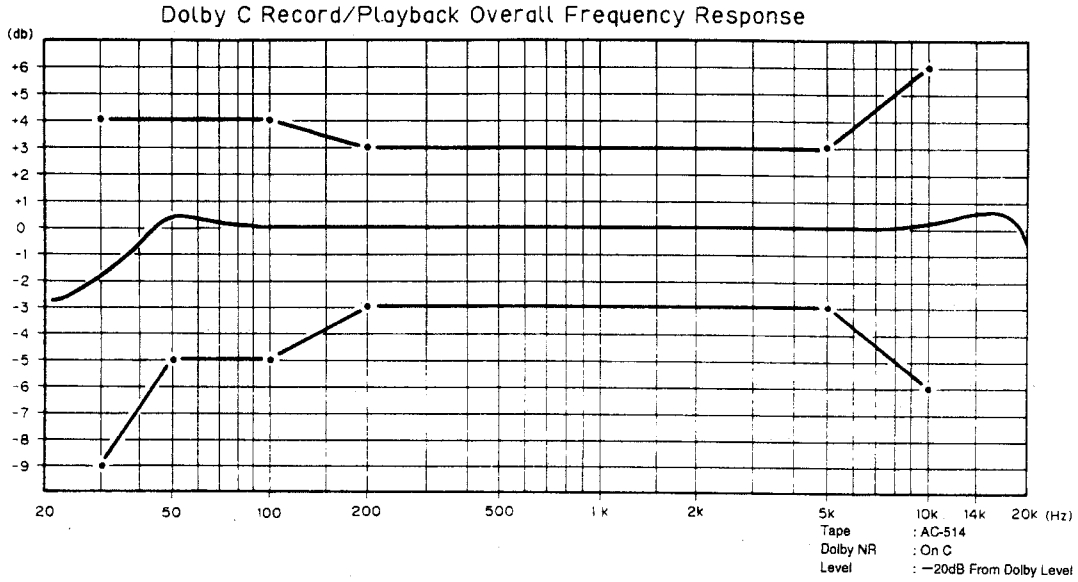
## 5. Adjusting the Recording Section

(1) Adjusting the record/playback overall frequency response. (HIgh)

1) Load the test tape AC-514, record a signal with an input level of −40 dB. 1 kHz at the LINE IN terminal; playback this recording.

2) Change the frequency of the input signal to 10 kHz, record and playback; adjust RT-105 (L ch), RT-205 (R ch) so that the characteristic standards meet the following diagram when compared to the 1 kHz signal output level.
(The other TAPE POSITIONS will automatically be adjusted by finishing of the foregoing adjustments.)




(2) Adjusting the record/playback levels (HIgh)

1) Load a AC-514 tape and after having recorded a signal of 1 kHz (−20 dB), play it back.

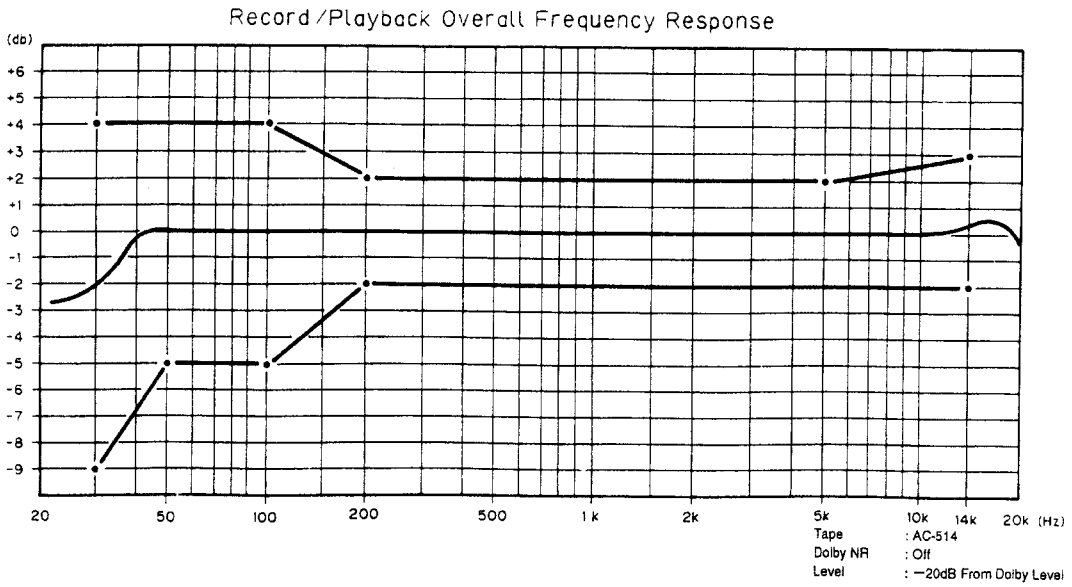
2) Adjust RT-103 (L ch) and RT-203 (R ch) so that the output from the line out terminal has the same value as the output when monitoring the recording.

(3) Checking the Dolby C record/playback overall frequency response

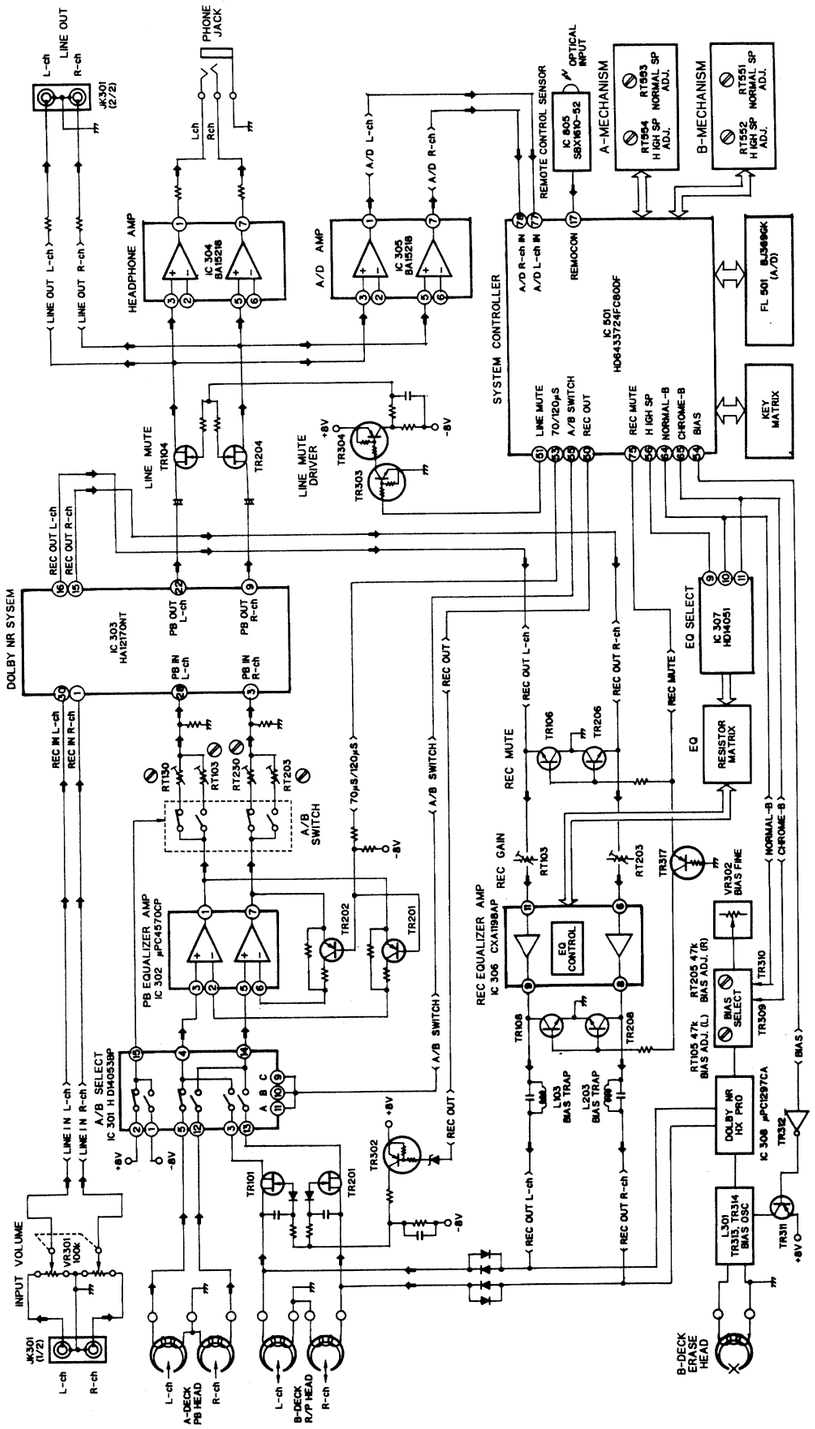
1) Set the DOLBY NR switch to the "C" position.

2) Using the test tapes AC-514, perform record/playback in the same manner as 5-(1).

3) Check to make sure that the record/playback overall frequency response meets the specifications in the diagram.



## 4. BLOCK DIAGRAM



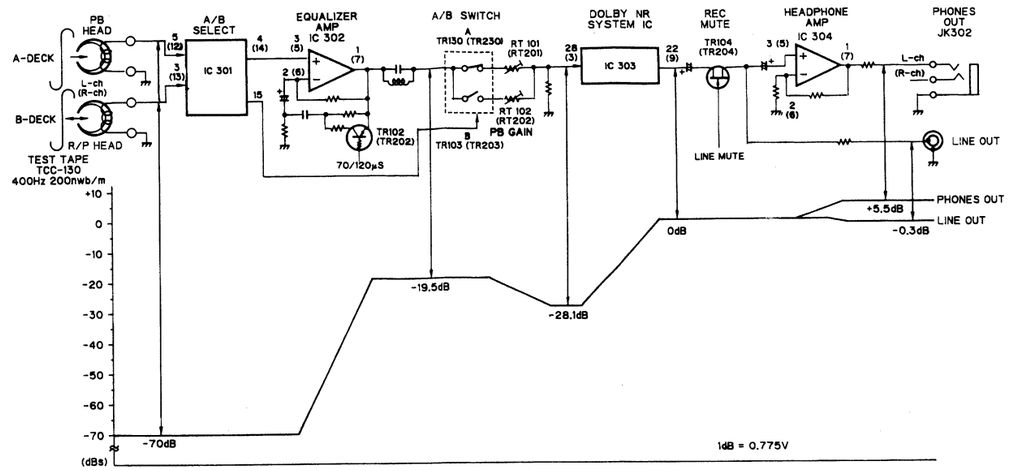



## 5. LEVEL DIAGRAM

### PLAYBACK SYSTEM

TCC-130 DOLBY B-TYPE
400 Hz 200 nwb/m

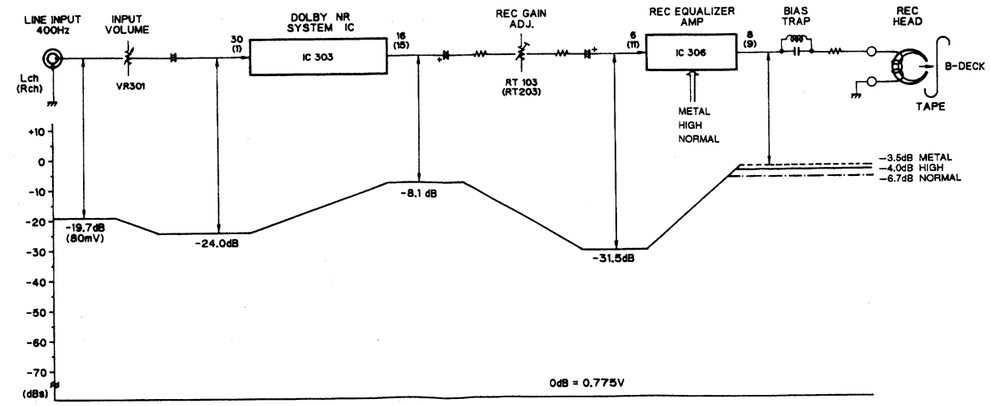
PLAYBACK MODE



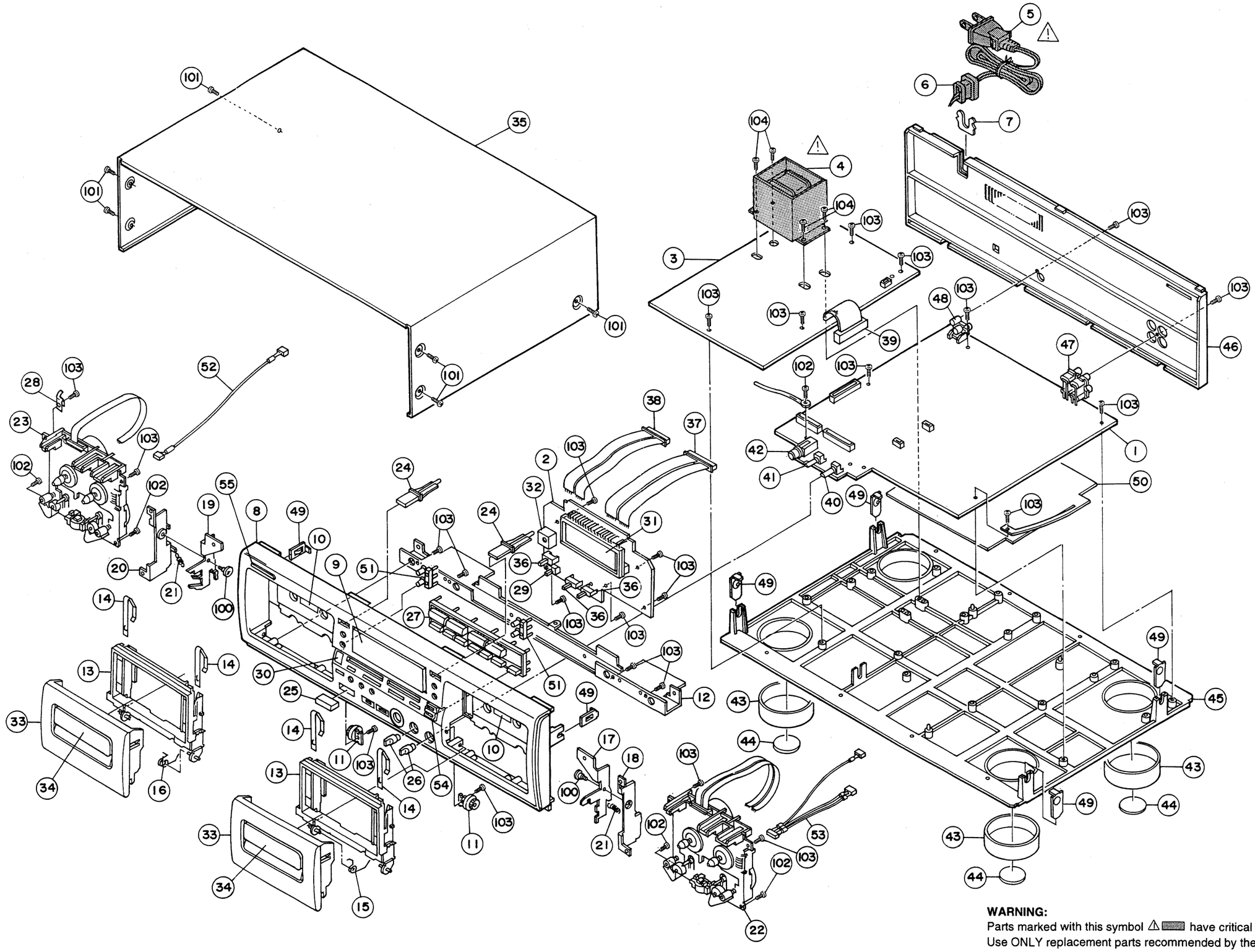

### RECORDING SYSTEM

INPUT FREQUENCY
400 Hz

REC MODE



## 6. EXPLODED VIEW AND PARTS LIST

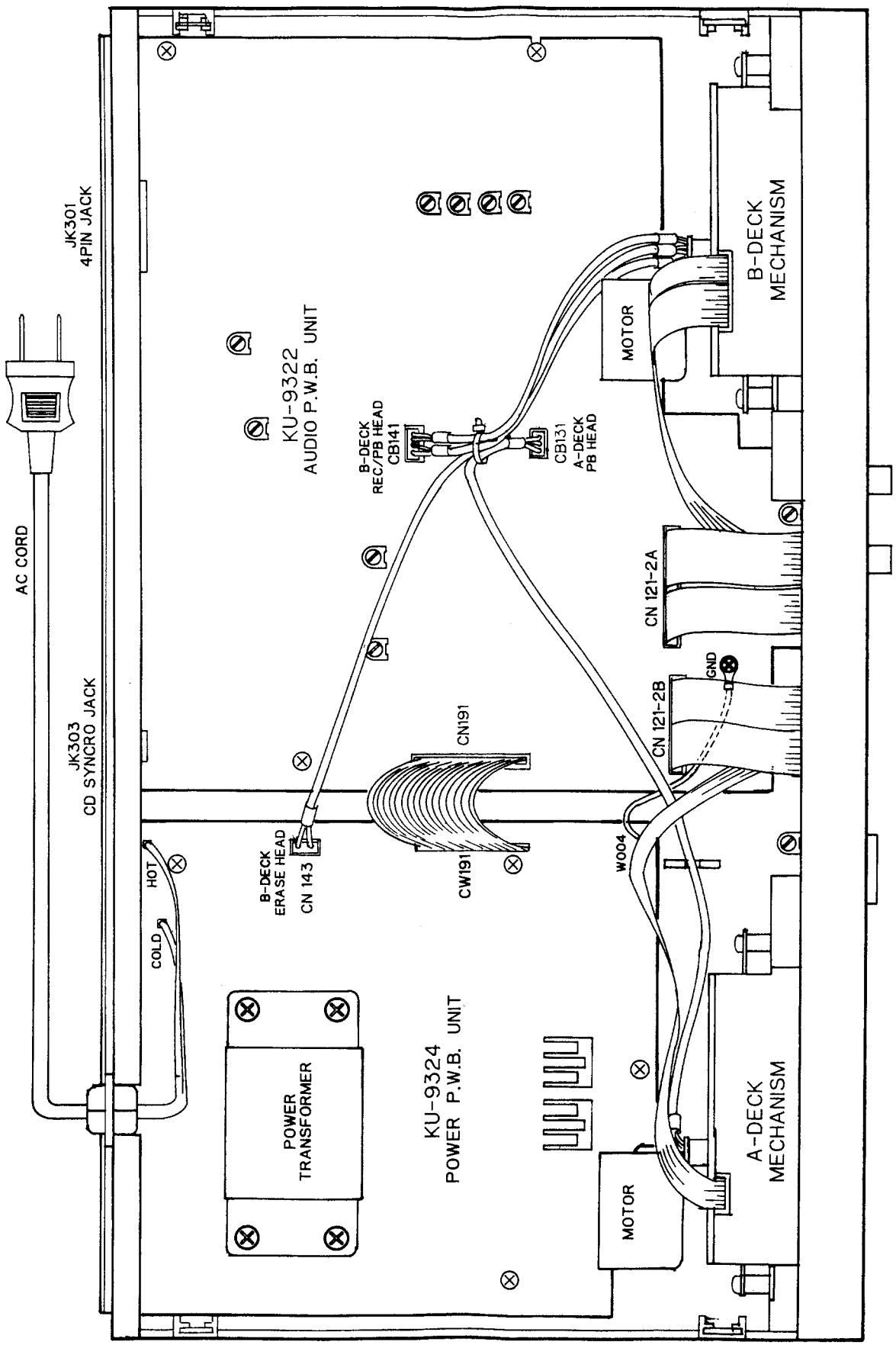



**WARNING:**
Parts marked with this symbol ⚠ ▨ have critical characteristic.
Use ONLY replacement parts recommended by the manufacturer.

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, **:EUROPE)

| POS. NO | VERS. COLOR | PART NO. (FOR EUROPE) | DESCRIPTION | PART NO. (USA/JPN) |
|---|---|---|---|---|
| ⚠ 4 | 01/02/05 | 4822 146 10584 | MAINS TRANSFORMER | *TS000590R |
| ⚠ 4 | U | | MAINS TRANSFORMER | *TS000580R |
| ⚠ 4 | F | | MAINS TRANSFORMER | *TS000600R |
| 8 | | 4822 459 04262 | FRONT PANEL | 204W248010 |
| 9 | | 4822 450 10173 | DISPLAY WINDOW | 204W158010 |
| 11 | | 4822 529 10358 | MINI DAMPER | 204W130010 |
| 13 | | 4822 256 10274 | CASSETTE BOX | 204W271010 |
| 14 | | 4822 492 11229 | CASSETTE SPRING | 204W115010 |
| 15 | | 4822 492 11231 | BOX SPRING (R) | 204W115020 |
| 16 | | 4822 492 11232 | BOX SPRING (L) | 204W115120 |
| 17 | | 4822 402 10445 | EJECT LEVER (B) | 204W354020 |
| 18 | | 4822 402 10446 | LEVER STAY (B) | 204W126020 |
| 19 | | 4822 402 10447 | EJECT LEVER (A) | 204W354010 |
| 20 | | 4822 402 10448 | LEVER STAY (A) | 204W126010 |
| 21 | | 4822 492 11233 | SPRING | 204W115030 |
| 22 | | 4822 249 10532 | C.MECHA (A)REC/PB | 204W304010 |
| 23 | | 4822 249 10533 | C.MECHA (B)PB | 204W304020 |
| 24 | | 4822 410 10645 | EJECT BUTTON | 204W270020 |
| 25 | | 4822 410 10646 | POWER BUTTON | 204W270030 |
| 26 | | 4822 410 10647 | VOL KNOB | 204W154010 |
| 27 | | 4822 410 10648 | FUNCTION BUTTON | 204W270010 |
| 30 | | 4822 450 10174 | REMOCON WINDOW | 204W355010 |
| 33 | | 4822 443 10398 | CASSETTE DOOR | 204W162010 |
| 34 | | 4822 450 10175 | WINDOW | 204W158020 |
| 43 | | 4822 532 12676 | FOOT CAP | 204W067010 |
| 51 | | 4822 410 10649 | PUSH BUTTON | 204W270040 |
| 54 | | 4822 442 00483 | KNOB COVER | 204W053010 |
| 55 | | 4822 459 11172 | MARANTZ BADGE | 185J251012 |
| 0TA | 01/02/05 | 4822 736 14591 | INSTRUCTIONS | 204W851310 |
| 0TA | U | | INSTRUCTIONS | 204W851250 |
| 0TA | F | | INSTRUCTIONS | 204W851110 |

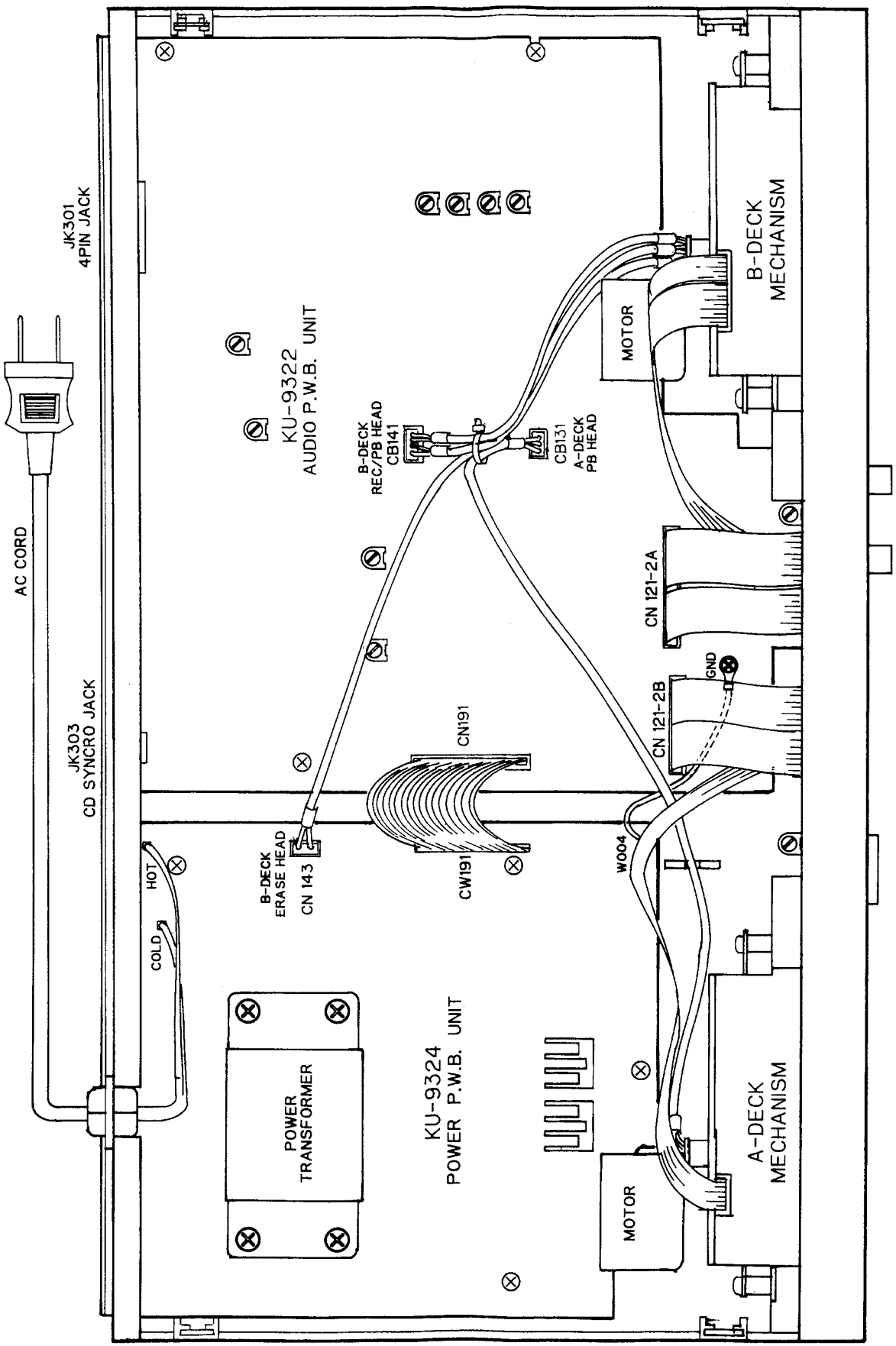
## 7. BUNDLE DIAGRAM



(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, **:EUROPE)

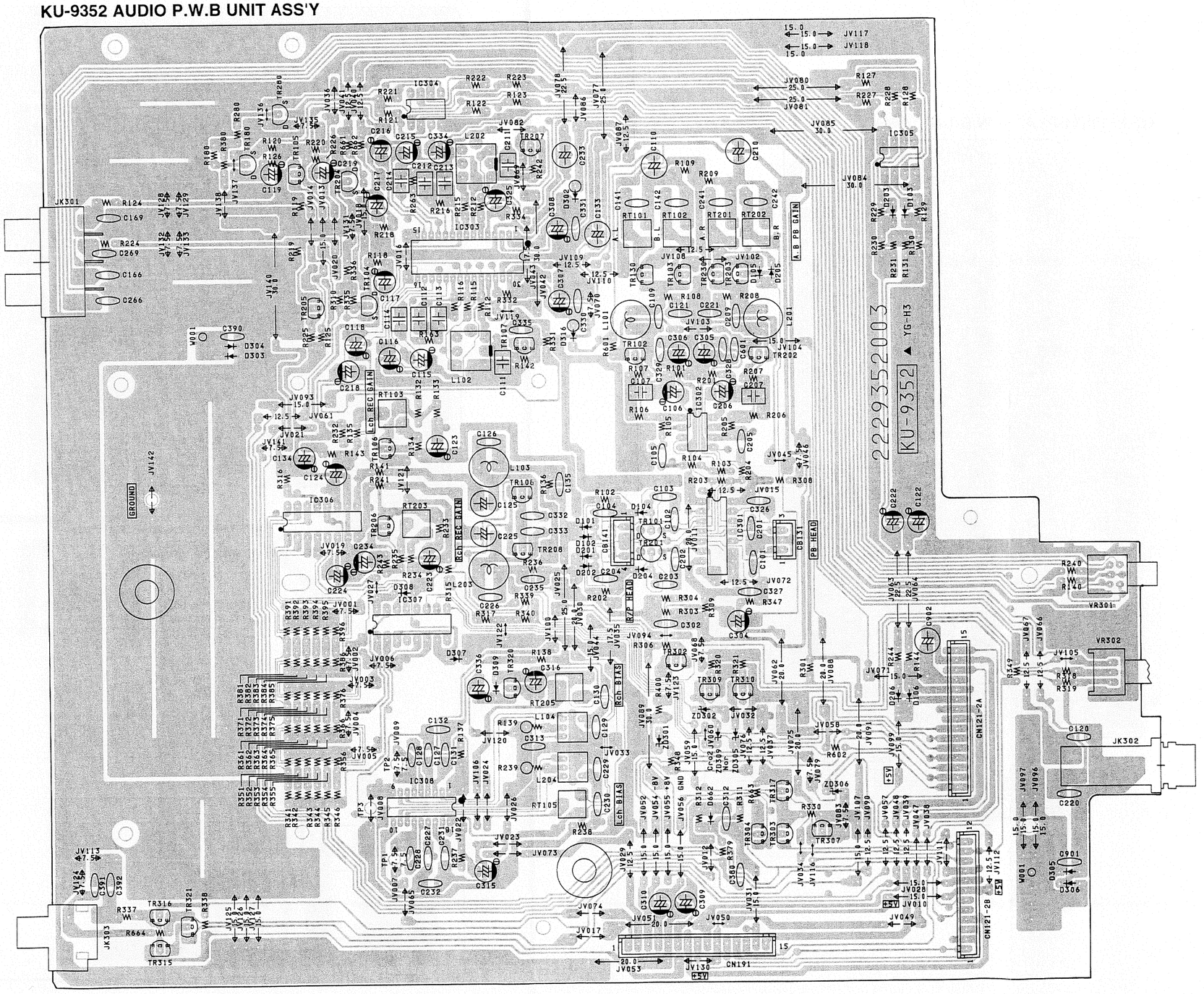
| POS. NO | VERS. COLOR | PART NO. (FOR EUROPE) | DESCRIPTION | PART NO. (USA/JPN) |
|---|---|---|---|---|
| ⚠ 4 | 01/02/05 | 4822 146 10584 | MAINS TRANSFORMER | *TS000590R |
| ⚠ 4 | U | | MAINS TRANSFORMER | *TS000580R |
| ⚠ 4 | F | | MAINS TRANSFORMER | *TS000600R |
| 8 | | 4822 459 04262 | FRONT PANEL | 204W248010 |
| 9 | | 4822 450 10173 | DISPLAY WINDOW | 204W158010 |
| 11 | | 4822 529 10358 | MINI DAMPER | 204W130010 |
| 13 | | 4822 256 10274 | CASSETTE BOX | 204W271010 |
| 14 | | 4822 492 11229 | CASSETTE SPRING | 204W115010 |
| 15 | | 4822 492 11231 | BOX SPRING (R) | 204W115020 |
| 16 | | 4822 492 11232 | BOX SPRING (L) | 204W115120 |
| 17 | | 4822 402 10445 | EJECT LEVER (B) | 204W354020 |
| 18 | | 4822 402 10446 | LEVER STAY (B) | 204W126020 |
| 19 | | 4822 402 10447 | EJECT LEVER (A) | 204W354010 |
| 20 | | 4822 402 10448 | LEVER STAY (A) | 204W126010 |
| 21 | | 4822 492 11233 | SPRING | 204W115030 |
| 22 | | 4822 249 10532 | C.MECHA (A)REC/PB | 204W304010 |
| 23 | | 4822 249 10533 | C.MECHA (B)PB | 204W304020 |
| 24 | | 4822 410 10645 | EJECT BUTTON | 204W270020 |
| 25 | | 4822 410 10646 | POWER BUTTON | 204W270030 |
| 26 | | 4822 410 10647 | VOL KNOB | 204W154010 |
| 27 | | 4822 410 10648 | FUNCTION BUTTON | 204W270010 |
| 30 | | 4822 450 10174 | REMOCON WINDOW | 204W355010 |
| 33 | | 4822 443 10398 | CASSETTE DOOR | 204W162010 |
| 34 | | 4822 450 10175 | WINDOW | 204W158020 |
| 43 | | 4822 532 12676 | FOOT CAP | 204W067010 |
| 51 | | 4822 410 10649 | PUSH BUTTON | 204W270040 |
| 54 | | 4822 442 00483 | KNOB COVER | 204W053010 |
| 55 | | 4822 459 11172 | MARANTZ BADGE | 185J251012 |
| 0TA | 01/02/05 | 4822 736 14591 | INSTRUCTIONS | 204W851310 |
| 0TA | U | | INSTRUCTIONS | 204W851250 |
| 0TA | F | | INSTRUCTIONS | 204W851110 |

## 7. BUNDLE DIAGRAM

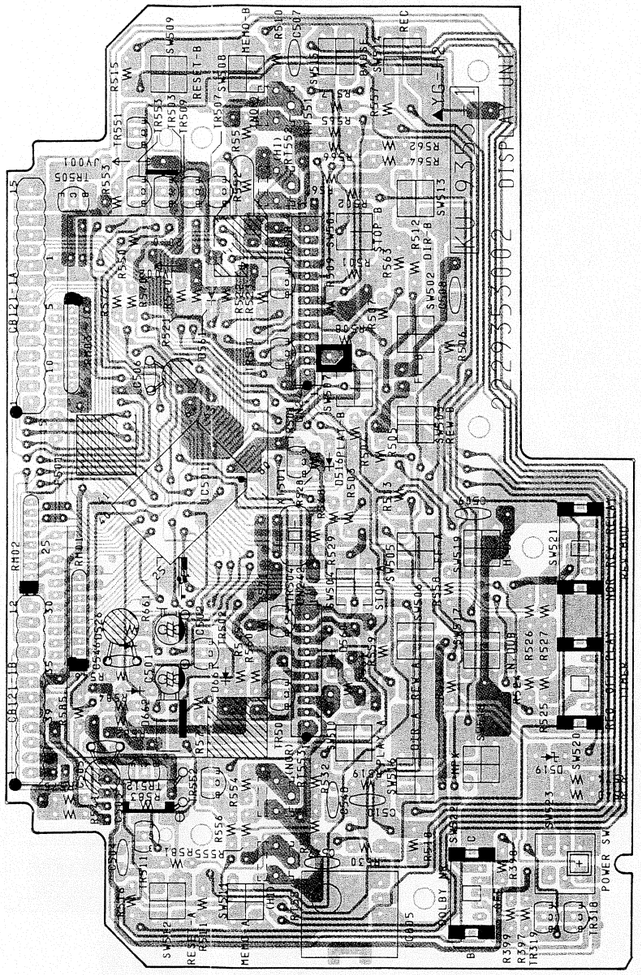


## 8. PRINTED WIRING BOARD PATTERNS

### KU-9352 AUDIO P.W.B UNIT ASS'Y

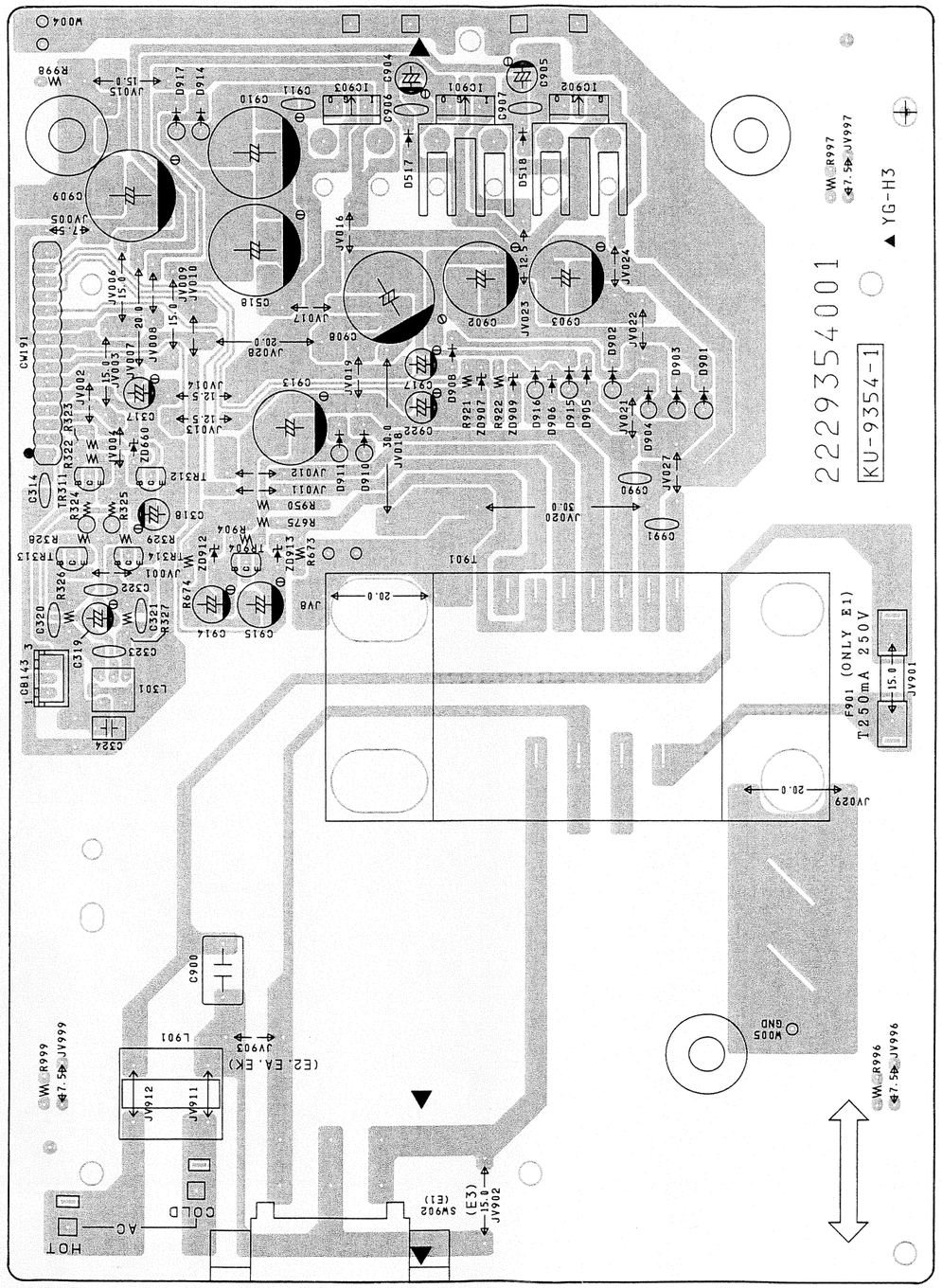


## KU-9353 DISPLAY P.W.B UNIT ASS'Y






## KU-9354 POWER P.W.B UNIT ASS'Y




Note: F901 Multi-voltagemodel only TV903 Europe, U.K. and Australia models.

## 9. ELECTRICAL PARTS LIST

(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, **:EUROPE)

| POS. NO | VERS. COLOR | PART NO. (FOR EUROPE) | DESCRIPTION | PART NO. (USA/JPN) |
|---|---|---|---|---|
| | | | **AUDIO UNIT** | |
| | | | **DIODE** | |
| D101 | | | | |
| \| | | 4822 130 10615 | DIODE 1SS270A/1N4125 | *HD200980R |
| D106 | | | | |
| D201 | | | | |
| \| | | 4822 130 10615 | DIODE 1SS270A/1N4125 | *HD200980R |
| D206 | | | | |
| ⚠ D302 | | 4822 130 32816 | DIODE 1SR35-200A | HD20016210 |
| D305 | | | | |
| \| | | 4822 130 10615 | DIODE 1SS270A/1N4125 | *HD200980R |
| D308 | | | | |
| ⚠ D316 | | 4822 130 32816 | DIODE 1SR35-200A | HD20016210 |
| D662 | | 4822 130 10615 | DIODE 1SS270A/1N4125 | *HD200980R |
| | | | **INTEGRATED CIRCUIT** | |
| IC301 | | 4822 209 83717 | HD14053BP | HC10056010 |
| IC302 | | 4822 209 14617 | UPC4570C | *HC103780R |
| IC303 | | 4822 209 14621 | HA12170NT | *HC103800R |
| IC304 | | 4822 209 61187 | BA15218 | HC10089210 |
| IC305 | | 4822 209 61187 | BA15218 | HC10089210 |
| IC306 | | 4822 209 14618 | CXA1198AP | *HC103790R |
| IC307 | | 4822 209 14619 | HD14051BP | *HC103770R |
| IC308 | | 4822 209 72874 | UPC1297CA | HC10200060 |
| | | | **JACK** | |
| JK302 | | 4822 265 10688 | H/P JACK (GOLD) | *YT000980R |
| | | | **COIL AND FILTER** | |
| L102 | | 4822 157 10886 | MPX FILTER | *TC000210R |
| L104 | | 4822 157 10887 | HX STEPUP COIL | *TC000220R |
| L202 | | 4822 157 10886 | MPX FILTER | *TC000210R |
| L204 | | 4822 157 10887 | HX STEPUP COIL | *TC000220R |
| | | | **TRANSISTOR** | |
| TR101 | | 4822 130 63673 | 2SK373(Y) | HF203731Y0 |
| TR102 | | 4822 130 63211 | DTA114TS | BA10003210 |
| TR103 | | 4822 130 63211 | DTA114TS | BA10003210 |
| TR104 | | 4822 130 10616 | 2SK184GR/2SK381B | *HF200200R |
| TR105 | | 4822 130 60107 | 2SA933S | HT110482B0 |
| TR106 | | 4822 130 42431 | 2SC1740S | HT317402F0 |
| TR107 | | 4822 130 42683 | DTC124ES | BA20024210 |
| TR108 | | 4822 130 61723 | DTC323TS | BA20028210 |
| ⚠ TR130 | | 4822 130 61189 | DTC114TS | BA20017210 |
| TR180 | | 4822 130 10616 | 2SK184GR/2SK381B | *HF200200R |
| TR201 | | 4822 130 63673 | 2SK373(Y) | HF203731Y0 |
| TR202 | | 4822 130 63211 | DTA114TS | BA10003210 |
| TR203 | | 4822 130 63211 | DTA114TS | BA10003210 |
| TR204 | | 4822 130 10616 | 2SK184GR/2SK381B | *HF200200R |
| TR205 | | 4822 130 60107 | 2SA933S | HT110482B0 |
| TR206 | | 4822 130 42431 | 2SC1740S | HT317402F0 |
| TR207 | | 4822 130 42683 | DTC124ES | BA20024210 |
| TR208 | | 4822 130 61723 | DTC323TS | BA20028210 |
| ⚠ TR230 | | 4822 130 61189 | DTC114TS | BA20017210 |
| TR280 | | 4822 130 10616 | 2SK184GR/2SK381B | *HF200200R |
| TR302 | | 4822 130 61227 | DTA114ES | BA10007210 |
| TR303 | | 4822 130 42683 | DTC124ES | BA20024210 |
| TR304 | | 4822 130 62797 | DTA144WS | BA20041210 |
| TR307 | | 4822 130 50437 | DTC143ES | BA20063210 |
| TR309 | | 4822 130 61321 | DTC124XS | BA20014210 |
| TR310 | | 4822 130 61321 | DTC124XS | BA20014210 |
| TR315 | | 4822 130 61227 | DTA114ES | BA10007210 |
| ⚠ TR316 | | 4822 130 60588 | DTC114ES | BA20010210 |
| TR317 | | 4822 130 63211 | DTA114TS | BA10003210 |
| ⚠ TR321 | | 4822 130 60588 | DTC114ES | BA20010210 |

| POS. NO | VERS. COLOR | PART NO. (FOR EUROPE) | DESCRIPTION | PART NO. (USA/JPN) |
|---|---|---|---|---|
| | | | **VARIABLE RESISTOR** | |
| VR301 | | 4822 101 11642 | VAR.RESISTER 100K(15A) | *RM000230R |
| VR302 | | 4822 101 11643 | VAR.RESISTER 1KB (BIAS) | *RM000220R |
| | | | **ZENER DIODE** | |
| ZD301 | | 4822 130 10617 | ZENOR HZS6A-1/MTZJ5.6A | *HD301250R |
| ZD302 | | 4822 130 10618 | ZENOR HZS9B-1/MTZJ9.1A | *HD301270R |
| ZD305 | | 4822 130 10618 | ZENOR HZS9B-1/MTZJ9.1A | *HD301270R |
| ZD306 | | 4822 130 10618 | ZENOR HZS9B-1/MTZJ9.1A | *HD301270R |
| ZD309 | | 4822 130 10618 | ZENOR HZS9B-1/MTZJ9.1A | *HD301270R |
| | | | **DISPLAY UNIT** | |
| | | | **ZENER DIODE** | |
| D516 | | 4822 130 10618 | ZENOR HZS9B-1/MTJ9.1A | *HD301270R |
| D519 | | 4822 130 10618 | ZENOR HZS9B-1/MTJ9.1A | *HD301270R |
| | | | **DIODE** | |
| D526 | | 4822 130 10615 | DIODE 1SS270A/1N4125 | *HD200980R |
| D560 | | 4822 130 10615 | DIODE 1SS270A/1N4125 | *HD200980R |
| D561 | | 4822 130 10615 | DIODE 1SS270A/1N4125 | *HD200980R |
| D661 | | 4822 130 10615 | DIODE 1SS270A/1N4125 | *HD200980R |
| D662 | | 4822 130 10615 | DIODE 1SS270A/1N4125 | *HD200980R |
| | | | **FL DISPLAY** | |
| FL501 | | 4822 135 00061 | FLD BJ369GK | *HQ300200R |
| | | | **INTEGRATED CIRCUIT** | |
| IC501 | | 4822 209 14622 | HD6433724E06F | *HU100260R |
| IC805 | | 4822 130 10619 | IR RECIEVER SBX1610-52 | *HW100320R |
| | | | **TRIMMING RESISTOR** | |
| RT551 | | 4822 101 11644 | TRIM POT 1K (TAPE SPEED) | RA01020470 |
| RT552 | | 4822 101 11645 | TRIM POT 2.2K (TAPE SPEED) | RA02220210 |
| RT553 | | 4822 101 11644 | TRIM POT 1K (TAPE SPEED) | RA01020470 |
| RT554 | | 4822 101 11645 | TRIM POT 2.2K (TAPE SPEED) | RA02220210 |
| | | | **SWITCH** | |
| SW501 | | | | |
| \| | | 4822 276 13786 | TACT SW SKHHAJ | *SP000660R |
| SW519 | | | | |
| SW520 | | | | |
| \| | | 4822 277 11593 | SLIDE SW SSSF013-S12N0 | *SS000510R |
| SW522 | | | | |
| SW523 | | 4822 276 13787 | PUSH SWITCH SPPH13-W | *SP000650R |
| | | | **TRANSISTOR** | |
| TR318 | | 4822 130 50437 | DTC143ES | BA20063210 |
| TR319 | | 4822 130 50437 | DTC143ES | BA20063210 |
| TR501 | | 4822 130 61227 | DTA114ES | BA10007210 |
| TR502 | | 4822 130 42594 | DTC144ES | BA20012210 |
| TR503 | | 4822 130 50437 | DTC143ES | BA20063210 |
| TR504 | | 4822 130 41945 | 2SB562C | HT205621C0 |
| TR505 | | 4822 130 50437 | DTC143ES | BA20063210 |
| TR506 | | 4822 130 41945 | 2SB562C | HT205621C0 |
| TR507 | | 4822 130 50437 | DTC143ES | BA20063210 |
| TR508 | | 4822 130 41945 | 2SB562C | HT205621C0 |
| TR509 | | 4822 130 50437 | DTC143ES | BA20063210 |
| TR510 | | 4822 130 41945 | 2SB562C | HT205621C0 |
| TR511 | | 4822 130 42593 | DTA124ES | BA10016210 |
| TR512 | | 4822 130 42593 | DTA124ES | BA10016210 |
| TR551 | | 4822 130 60107 | 2SA933S | HT110482B0 |
| TR552 | | 4822 130 60107 | 2SA933S | HT110482B0 |
| TR553 | | 4822 130 50437 | DTC143ES | BA20063210 |

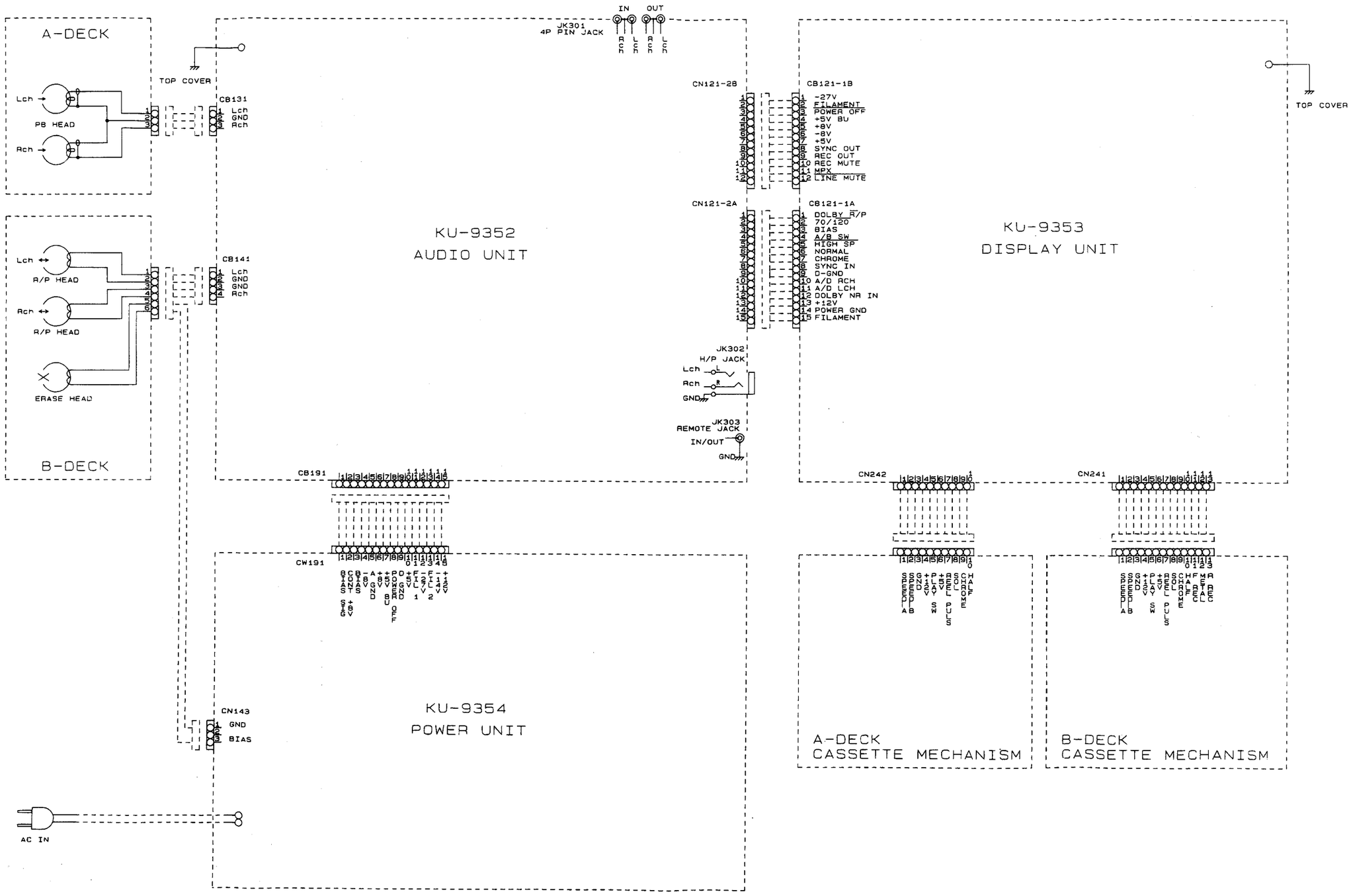
(VERS. :VERSION, U:U.S.A., F:JAPAN, K:FAR EAST, **:EUROPE)

| POS. NO | VERS. COLOR | PART NO. (FOR EUROPE) | DESCRIPTION | PART NO. (USA/JPN) |
|---|---|---|---|---|
| | | | **POWER UNIT** | |
| | | | **DIODE** | |
| D517 | | 4822 130 10615 | DIODE 1SS270A/1N4125 | *HD200980R |
| D518 | | 4822 130 10615 | DIODE 1SS270A/1N4125 | *HD200980R |
| ⚠ D901 | | | | |
| \| | | 4822 130 32816 | RECTIFIER 1SR35-200A | HD20016210 |
| ⚠ D904 | | | | |
| D905 | | 4822 130 10615 | DIODE 1SS270A/1N4125 | *HD200980R |
| D906 | | 4822 130 10615 | DIODE 1SS270A/1N4125 | *HD200980R |
| D908 | | 4822 130 10615 | DIODE 1SS270A/1N4125 | *HD200980R |
| ⚠ D910 | | 4822 130 32816 | DIODE 1SR35-200A | HD20016210 |
| ⚠ D911 | | 4822 130 32816 | DIODE 1SR35-200A | HD20016210 |
| ⚠ D914 | | | | |
| \| | | 4822 130 32816 | DIODE 1SR35-200A | HD20016210 |
| ⚠ D917 | | | | |
| | | | **INTEGRATED CIRCUIT** | |
| ⚠ IC901 | | 4822 209 14623 | NJM7808FA | HC3890809F |
| ⚠ IC902 | | 4822 209 14624 | NJM7908FA | HC3990809F |
| ⚠ IC903 | | 4822 209 73674 | NJM7806FA | HC38906090 |
| | | | **COIL** | |
| L301 | | 4822 157 11046 | OSC COIL | *TC000240R |
| | | | **TRANSISTOR** | |
| TR311 | | 4822 130 41945 | 2SB562C | HT205621C0 |
| TR312 | | 4822 130 50437 | DTC143ES | BA20063210 |
| TR313 | | 4822 130 42431 | 2SC1740S | HT317402F0 |
| TR314 | | 4822 130 42431 | 2SC1740S | HT317402F0 |
| TR904 | | 4822 130 41945 | 2SB562C | HT205621C0 |
| | | | **ZENER DIODE** | |
| ZD660 | | 4822 130 10621 | ZENOR HZS2C-1/MTZJ2.2B | *HD301210R |
| ZD907 | | 4822 130 10622 | ZENOR HZS5C-1/MTZJ5.1A | *HD301240R |
| ZD909 | | 4822 130 10623 | ZENOR HZS4C-1/MTZJ4.3A | *HD301220R |
| ZD912 | | 4822 130 10624 | ZENOR HZS27-1/MTZJ27B | *HD301280R |
| ZD913 | | 4822 130 10625 | ZENOR HZS5A-1/MTZJ4.3C | *HD301230R |
| ZD913 | | 4822 130 10626 | ZENOR HZS9A-1/MTZJ8.2B | *HD301260R |

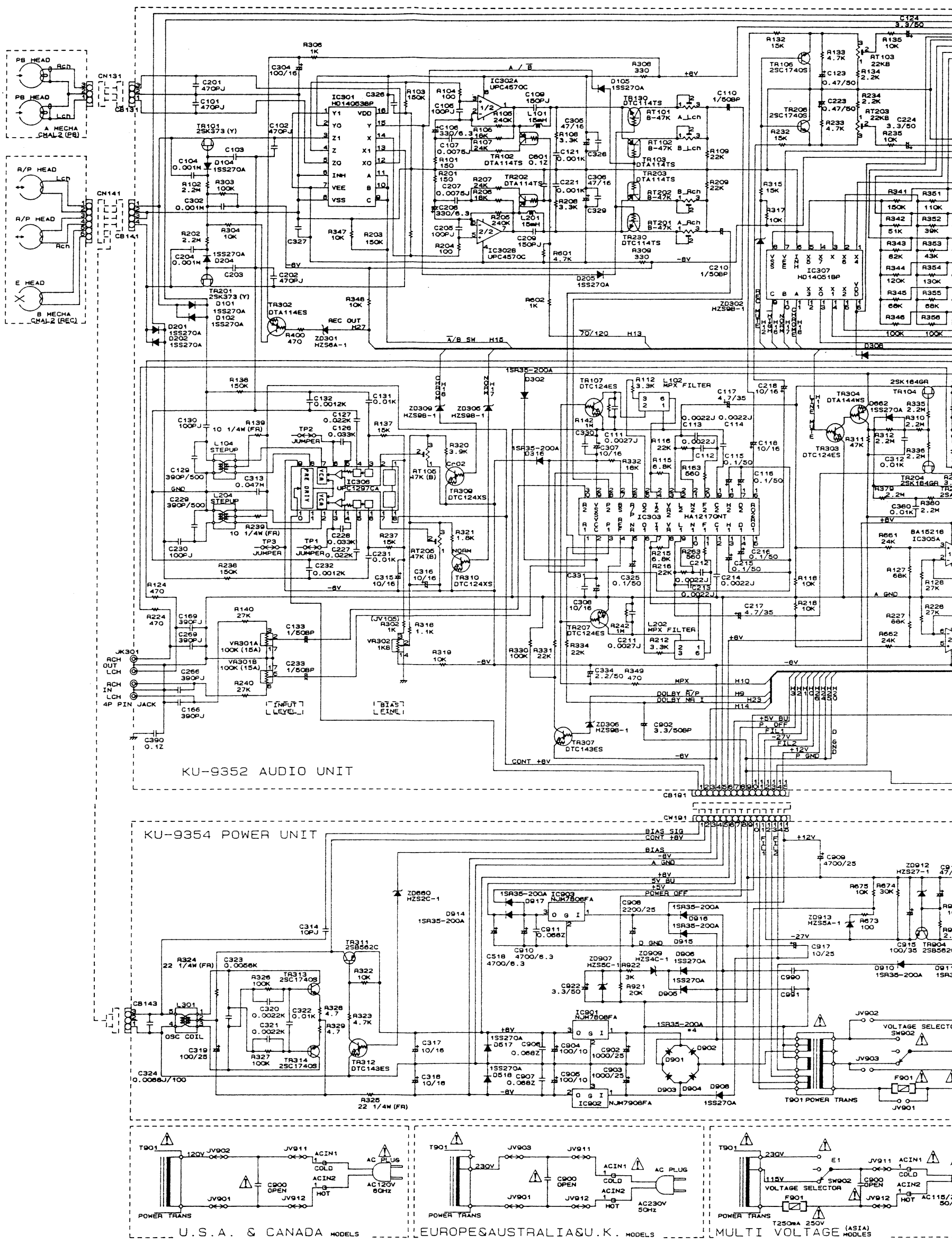
**NOTE ON SAFETY :**

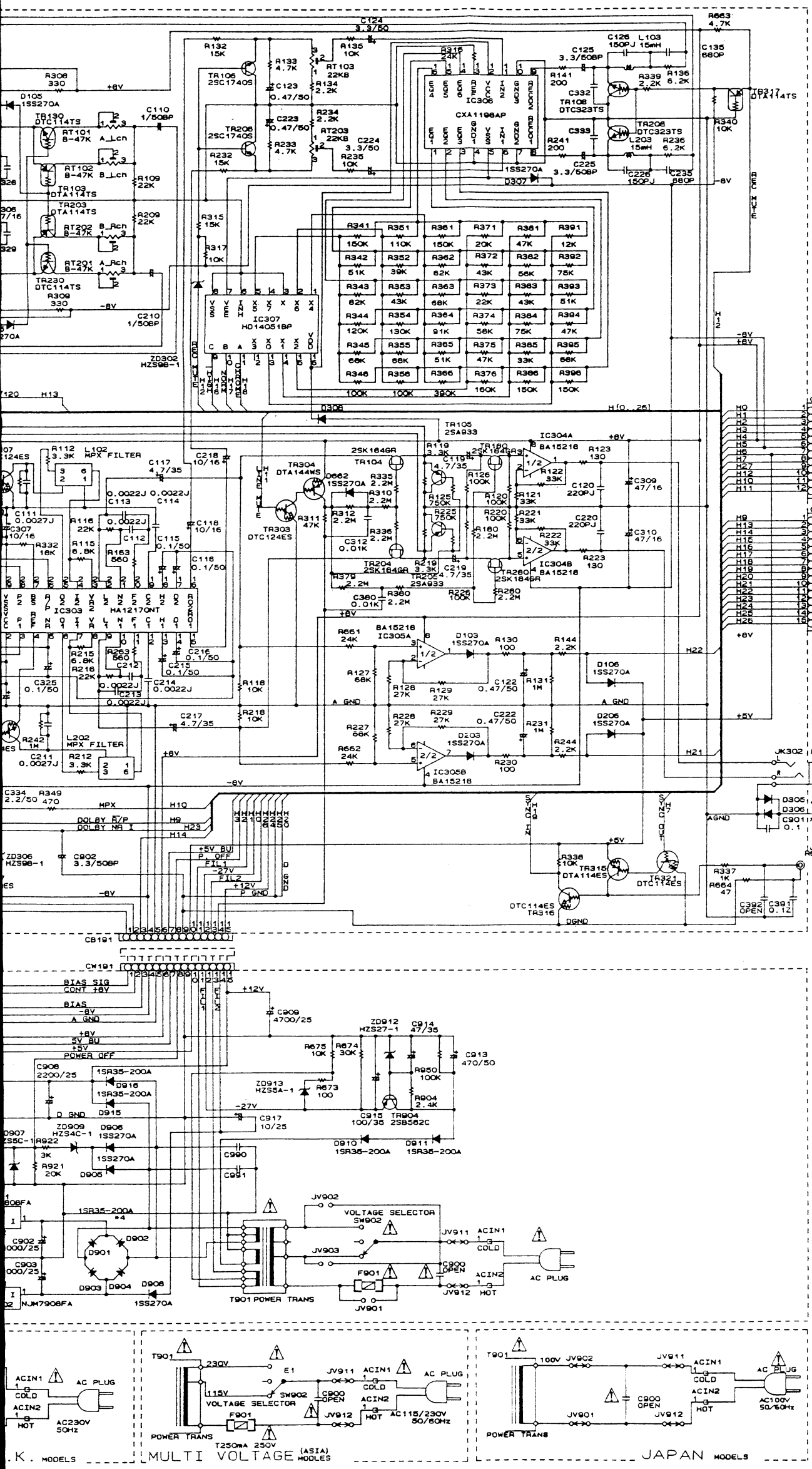
Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replaced any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

## 10. WIRING DIAGRAM



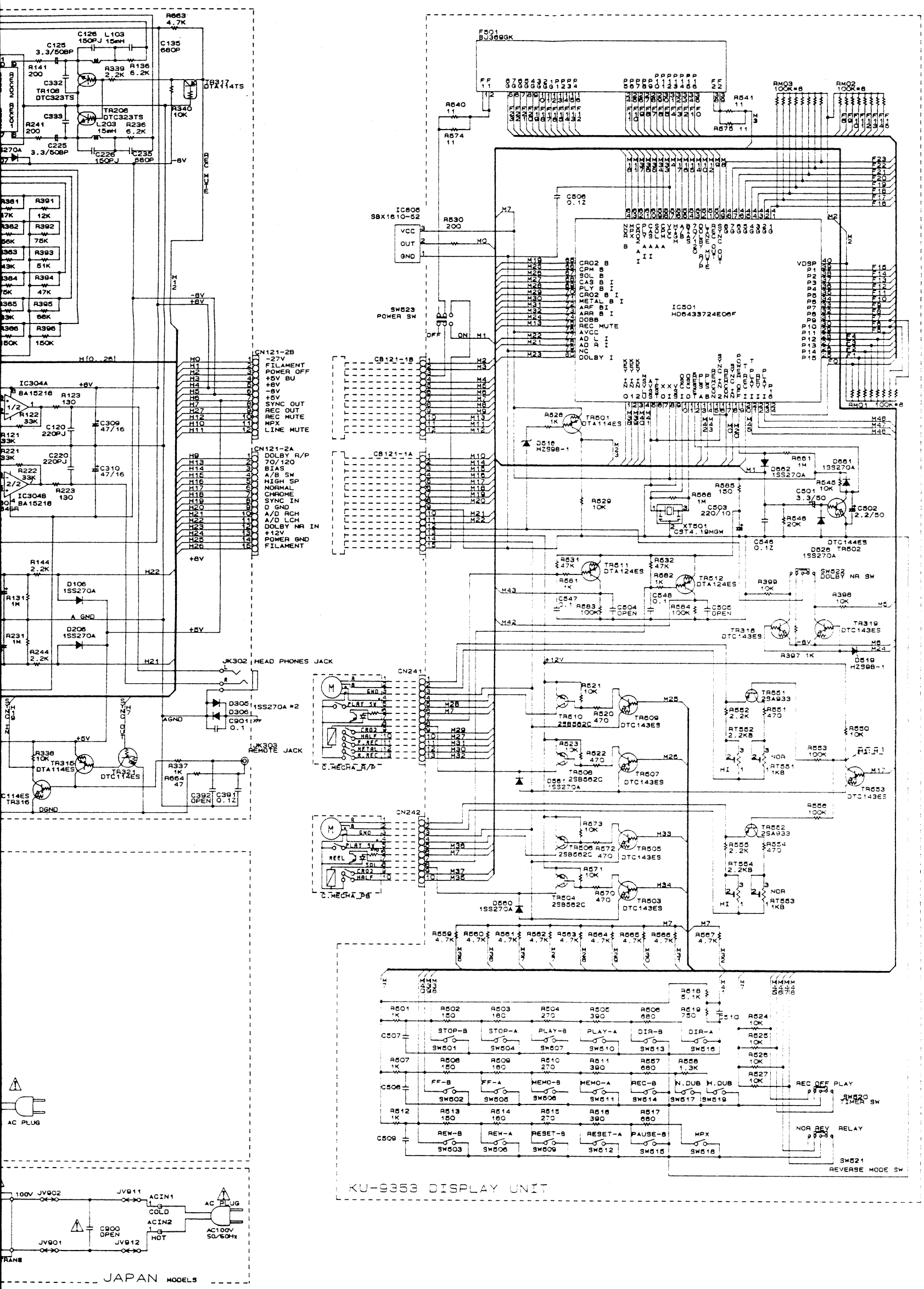
## 11. SCHEMATIC DIAGRAM






Note:
- Resistance shall be 1/4 W unless otherwise specified and the unit is ohr
- The unit of capacitor is μF, P is pF unless otherwise specified.
- This circuit diagram shows the basic circuit. It is subject to change for th

Parts marked with this symbol ⚠ ▨ have critical characteristic.
Use ONLY replacement parts recommended by the manufacturer.




Note:
- Resistance shall be 1/4 W unless otherwise specified and the unit is ohm.
- The unit of capacitor is μF, P is pF unless otherwise specified.
- This circuit diagram shows the basic circuit. It is subject to change for the purpose of improvement.

Parts marked with this symbol ⚠ ▨ have critical characteristic.
Use ONLY replacement parts recommended by the manufacturer.

## 12. SEMICONDUCTORS

- IC's




- BA15218
- μPC4570C







- μPC1297CA






3 GND
2 INPUT
1 OUTPUT

- NJM7908FA

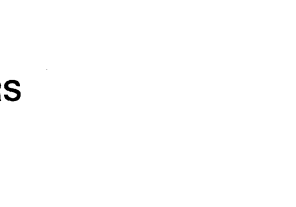



- HD6433724FC80F



3 INPUT
2 GND
1 OUTPUT

- NJM7808FA
- NJM7806FA




- CXA1198AP
- HD14051BP




- HD14053BP



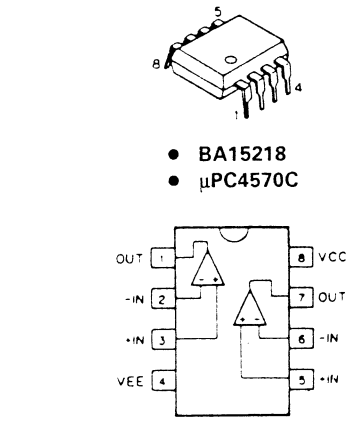

- HA112170NT

- REMOTE SENSO

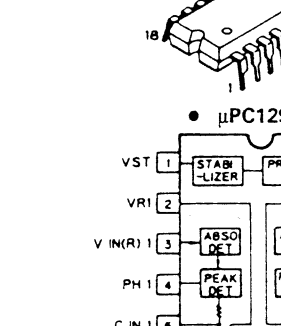
(SBX1610-52)

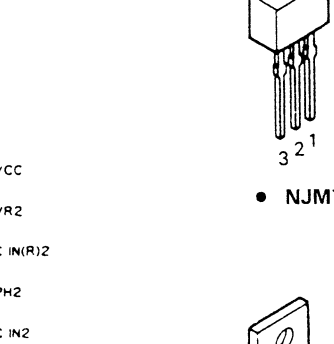


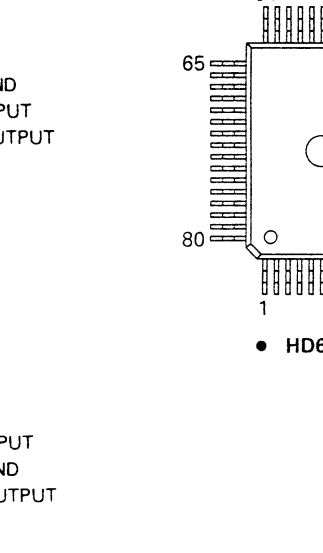

1. Vcc
2. Output
3. GND
4. Case Fin
5. Case Fin




- CXA1198AP

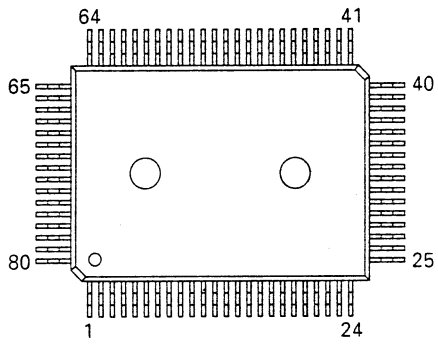


3 GND
2 INPUT
1 OUTPUT

17908FA

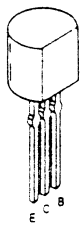



- **HD6433724FC80F**

3 INPUT
2 GND
1 OUTPUT

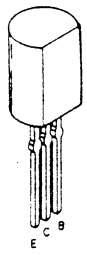
17808FA
17806FA

## • TRANSISTORS



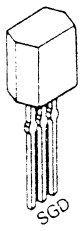

B (Base)
C (Collector)
E (Emitter)

- **2SA933S**
- **2SK373**
- **2SC1740**

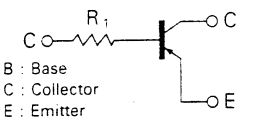



B (Base)
C (Collector)
E (Emitter)

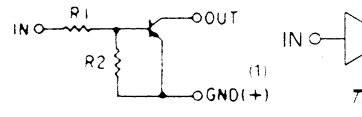
- **2SB562**



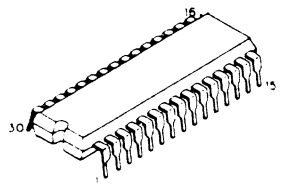

- **2SK184**
- **2SK381**



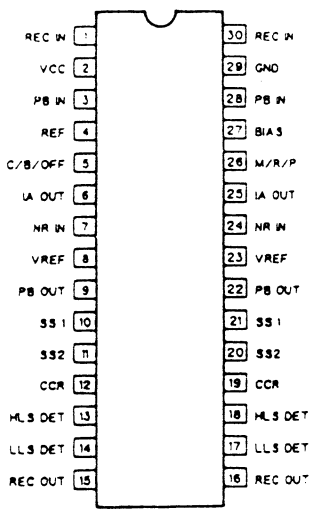

| | R1 |
|---|---|
| DTA114TS | 10 kohm |
| DTA124TS | 22 kohm |
| DTC323TS | 2.2 kohm |




| | R1 | R2 |
|---|---|---|
| DTA114ES | 10 kohm | 10 koh |
| DTA124ES | 22 kohm | 22 koh |
| DTA144ES | 47 kohm | 47 koh |
| DTA144WS | 47 kohm | 22 koh |

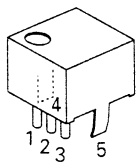


- **HA112170NT**

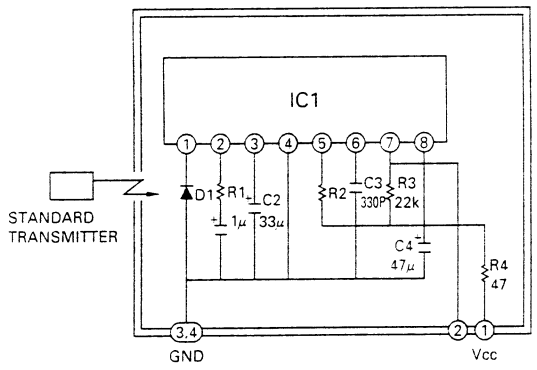



## • REMOTE SENSOR

**(SBX1610-52)**

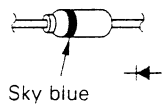



1. **Vcc**
2. **Output**
3. **GND**
4. **Case Fin**
5. **Case Fin**




**IC1** : **CX20106A Chip**
**D1** : **PIN Photo Diode Chip**
**C1, C2, C4** : **Aluminum Electrolytic Capacitor**
**C3** : **SL Characteristic ±5%**
**R1** : **Gain Adjuster**
**R2** : **fo Adjust ±1% USE**
**R3, R4** : **±5%**

## • DIODES



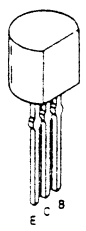
Sky blue

**1SS270A**

Navy b

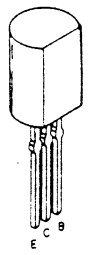
HZ
HZ
HZ
HZ
HZ

## • TRANSISTORS



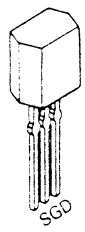

B (Base)
C (Collector)
E (Emitter)

- **2SA933S**
- **2SK373**
- **2SC1740**



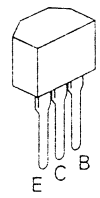

B (Base)
C (Collector)
E (Emitter)

- **2SB562**




S (Source)
G (Gate)
D (Drain)

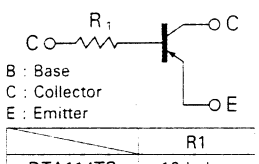
- **2SK184**
- **2SK381**



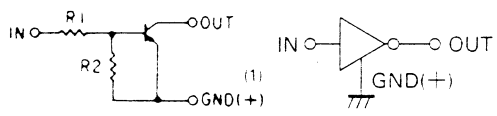

B (Base)
C (Collector)
E (Emitter)

**DTA114ES**
**DTA114TS**
**DTA124ES**
**DTA124TS**
**DTA144ES**
**DTA144WS**

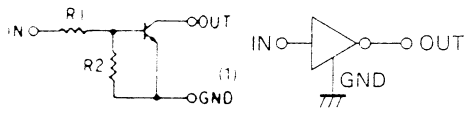
**DTC114ES**
**DTC124ES**
**DTC124XS**
**DTC143ES**
**DTC144ES**
**DTC323TS**



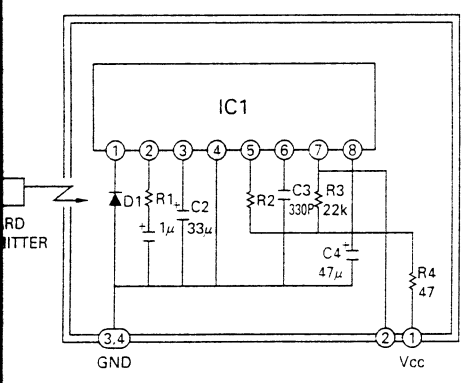

| | R1 |
|---|---|
| DTA114TS | 10 kohm |
| DTA124TS | 22 kohm |
| DTC323TS | 2.2 kohm |




| | R1 | R2 |
|---|---|---|
| DTA114ES | 10 kohm | 10 kohm |
| DTA124ES | 22 kohm | 22 kohm |
| DTA144ES | 47 kohm | 47 kohm |
| DTA144WS | 47 kohm | 22 kohm |

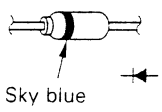



| | R1 | R2 |
|---|---|---|
| DTC114ES | 10 kohm | 10 kohm |
| DTC124ES | 22 kohm | 22 kohm |
| DTC124XS | 22 kohm | 47 kohm |
| DTC143ES | 4.7 kohm | 4.7 ohm |
| DTC144ES | 47 kohm | 47 kohm |

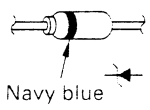



**IC1** : **CX20106A Chip**
**D1** : **PIN Photo Diode Chip**
**C1, C2, C4** : **Aluminum Electrolytic Capacitor**
**C3** : **SL Characteristic ±5%**
**R1** : **Gain Adjuster**
**R2** : **fo Adjust ±1% USE**
**R3, R4** : **±5%**

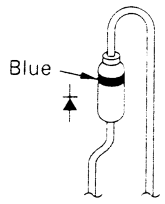
## • DIODES




**1SS270A**




**HZS2C-1**
**HZS5C-1**
**HZS6A-1**
**HZS9A-1**
**HZS27-1**




**1SR35-200A**